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FIRST AERO WEEKLY IN THE WORLD.

FLIGHT

MAY 15 1933

The AIRCRAFT ENGINEER AND AIRSHIPS

OFFICIAL ORGAN OF THE ROYAL AERO CLUB.

No. 1271
Vol. XXV
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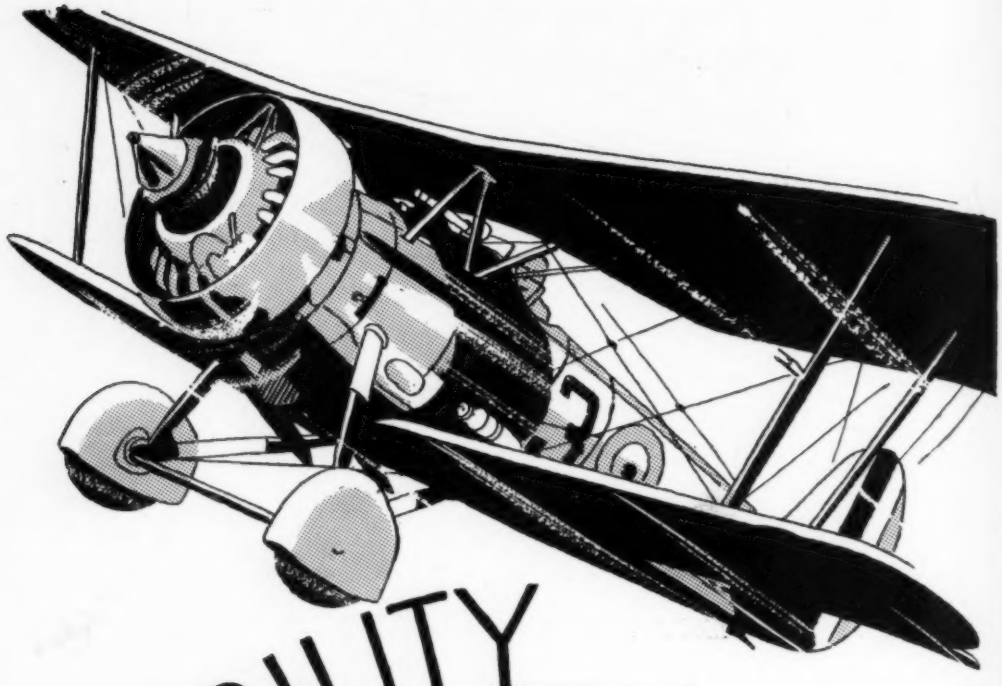

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WHAT a difference it makes to the morale and dash of a pilot to know that his aircraft is entirely reliable in every detail of its structure—to know that it is equal to every call which can be made upon it. This is an important factor in the efficiency of "Bristol" Bulldog squadrons. Skill of pilotage, with high performance and manœuvrability of the aircraft are important features, but their value is doubly enhanced by the knowledge that a "Bristol" aircraft will never be found wanting.

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FLIGHT

The AIRCRAFT ENGINEER AND AIRSHIPS

First Aeronautical Weekly in the World. Founded January, 1909

Founder and Editor: STANLEY SPOONER

A Journal devoted to the Interests, Practice and Progress of Aerial Locomotion and Transport

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DIARY OF CURRENT AND FORTHCOMING EVENTS

Club Secretaries and others desirous of announcing the dates of important fixtures are invited to send particulars for inclusion in this list:—

1933.
May 5. Oxford University Air Sqdn. Dinner, Clarendon Hotel, Oxford.
May 6. No. 84 Sqdn. R.A.F. Reunion Dinner at R.A.F. Club.
May 13. No. 2 Sqdn. R.A.F. Reunion Dinner, Park Lane Hotel.
May 16-22. International Rally, Vienna.
May 19. Entries close at ordinary fee for King's Cup Race.
May 20. G.A.P.A.N. Annual Civil Air Display, Brooklands.
May 20-22. Scottish Flying Club Annual Display, Renfrew.
May 25. Tourist Rally at Wiesbaden.
May 27. Reading Ae.C. Annual "At Home."
May 28. Deutsch de la Meurthe Cup, Etampes.
May 29. Opening of R.A.F. Rifle Association's Meeting at Bisley.
May 30. Wilbur Wright Memorial Lecture before R.Ae.S.
May 31. Entries close at double fee for King's Cup Race.
June 4. Skegness Flying Meeting.
June 5. "Morning Post" Race, Heston.
June 5. Lincs. Ae.C. Air Pageant and Opening of Aerodrome at Holton-le-Clay, Grimsby.
June 5. Northamptonshire Ae.C. Annual Air Pageant.
June 7. Household Brigade Flying Club Meeting.
June 10. Henly's Rally, Heston.
June 11. International Meeting, Brussels.
June 15-18. Aero Club of France Tourist 'Plane Meeting.
June 16. Mayor's Aerial Garden Party, Eastbourne.
June 16-17. Opening of Inverness Municipal Airport.
June 17. Bristol Airport Flying Meeting.
June 17. Charity Air Display at Maidstone Airport.
June 20. Princess Mary's R.A.F. Nursing Services Afternoon Reception, Claridge's.
June 21. Official Opening of Norwich Municipal Airport by H.R.H. the Prince of Wales.
June 23. R.A.F. Dinner Club Dinner, Connaught Rooms.
June 24. Royal Air Force Display, Hendon.
June 26. S.B.A.C. Aircraft Display and Exhibition, Hendon.
July 1. Merseyside Aviation Display and Opening of Speke Aerodrome, Liverpool.
July 1-4. U.S. National Air Races, Los Angeles Airport.
July 2. 12-Hour Contest of Distance, Angers.
July 2-3. Rotterdam Air Display.
July 8. King's Cup Air Race, Hatfield.

EDITORIAL COMMENT

THE sudden removal of the new tapered-wing "Fury" from the Air Ministry Secret List is a welcome departure and novelty. Too strict a devotion to the principle of secrecy is apt to create false impressions among the public. When nothing may be published about machines which are being developed with zeal by the Air Ministry in collaboration with the Trade, the man in the street, including sometimes the man in Parliament, is apt to form the opinion that the Air Ministry has gone to sleep, with its head reposing on a pillow of Schneider laurels. We certainly are not prepared to hold up the Air Ministry as an example of all that a Government Department ought to be, and at times we feel it necessary to offer some criticism. We do think that over-devotion to secrecy is one of the faults of the Air Ministry, but we do not accuse the Directorates of Technical Development and Scientific Research of undue somnolence. When a new type has been approved for issue to squadrons, we have often felt impelled to comment on the long time which elapses before the requisite number of squadrons has been fully equipped with that type. This sort of delay was particularly noticeable in the case of the "Bulldog." The issue of the "Hart" day bomber, which was much more speedily completed, found some squadrons still flying the "Siskin," at a time when the ideal would have been to have used only fighters with the highest possible performance.

Fighting Performance

Supply must always be to some extent a matter of Treasury sanction and so of national finance. This sanction must have some relation to the opinion of the Cabinet and the Foreign Office as to the immediate prospects of peace and war. If there is really no prospect of the country becoming involved in war in the near future, while the difficulties of balancing the Budget are turning grey the hair of the Chancellor of the Exchequer—to say nothing of the head-coverings of the income-tax payers—we must at times put up with a certain long drawing out of the process of re-equipment. The most serious results

of such a delay are probably the effect on the aircraft firms. They find it difficult to keep their works busy and to hold their skilled staffs together. When those staffs are depleted, a sudden expansion becomes very difficult. So long as the firms can be kept in a position to turn out numbers of aircraft at short notice, while the processes of research and development are not allowed to slacken off, we do not see any great need to despair of the safety of the country in the air.

There are a few inventions so important and so vital that it is very necessary to keep them secret. Apart from such secrets, we think that the best thing to do is to take the public into the confidence of the Air Ministry as much as possible, as has been done in the case of the new "Fury." Such publicity shows that the Air Ministry is justifying its existence, and that our aircraft designers are able to hold their own with their foreign competitors, and can still do better than they. It is no easy task to keep ahead of foreign competition. We have no monopoly of inventive brains, as the recent Italian success in breaking the high-speed record has shown. Nevertheless, we do firmly hold to the belief that our aircraft firms can do better than any others. Some foreign firms have certainly done a great deal lately in putting up the cruising speed of civil aircraft. It is often done by means of high wing loading, and consequent fast landing speed, such as we have no desire to see copied in British machines. It is also invariably done by the use of fuels of a much higher "Octane Number." The British Air Ministry is, rightly or wrongly, taking its time over considering the matter of octane number. A very good case can be made out for permitting British constructors to use fuels of an octane number comparable with those of the fuels used in America, France and Italy, for example, and there can be no doubt that in several cases the performance of British aeroplanes has suffered because of the present official limitation of this number to 76. We have, however, no doubt that the Air Ministry is fully alive to this fact, and that as soon as it is considered practicable, a change will be made. This will immediately benefit the performance of our aeroplanes. Speed is very desirable in most forms of aircraft, but nearly always a price has to be paid for speed, and the customer, be he a Government Department, a flying company, or a private person, should see that the price is not too high. In fighter aircraft particularly is speed a great desideratum, but horizontal speed at ground level must not be bought at the expense of speed in climb, of ceiling, or of speed at a great height. A fighter which can fly at 200 m.p.h. at 20,000 ft., for example, would probably be a more useful machine to the Fighting Area than one which can do 250 m.p.h. at 5,000, but loses performance above that height.

Then one must never forget the fighting qualities of an aircraft. If one thinks too much of sheer speed, one is apt to lay too little stress on these qualities. A commercial aircraft may be able to fly fast, but it does not have to indulge in furious dives, zooms, banks, Immelmann turns, and all the other manœuvres necessary to the fighter. If the commercial aircraft were subjected to such treatment, it would not long remain a commercial aircraft. The pilot of the commercial machine needs a good view for landing, but he does not need a good view for fighting. The fighter pilot must be able to see in practically all directions. His guns must not be forgotten, as they sometimes are. They must be conveniently placed, and the pilot must be able to clear a jamb in the midst of a fight.

Not very long ago Mr. C. R. Fairey delivered a lecture, in the course of which he considered what the result would be of trying to convert the Schneider winner into a fighter and the Fairey long-range monoplane into a bomber. He described the series of steps which would have to be taken, and at the end the Supermarine was not very fast and the Fairey had not a very long range. His method was perhaps a *reductio ad absurdum*, but it did show the futility of comparing specially-designed machines with those which would be useful to the Royal Air Force.

Criticisms which may lead the unthinking public to draw erroneous conclusions can be avoided by a judicious use of publicity on the part of the Air Ministry. So long as no vital secrets are divulged, we believe that the public would very much appreciate a more frequent display of confidence on the lines of this recent announcement about the latest "Fury."

HOME AGAIN: The Fairey Long-range Monoplane ("Napier" engine) landed at Farnborough on May 2, after its world's record non-stop flight to Walvis Bay and subsequent tour of Africa. In spite of their journey of more than 13,000 miles Sqd. Ldr. Gayford and Flt. Lt. Nicholetts appeared very fit and well. (FLIGHT *Photo.*)

MOUNT EVEREST FROM THE SOUTH : In front are the peaks of Chamlang and Lhotse. This photograph, copyright by *The Times*, was taken on an Ilford panchromatic plate, probably through a red filter.

THE NORTH-EAST SLOPE OF EVEREST, LOOKING ALONG THE CLIMBER'S PATH : This photograph, copyright by *The Times*, was taken on an Ilford panchromatic plate.

A Second Flight over Everest

INSUBORDINATION appears to have been indulged in by the Houston-Everest Flight in making a second attack on the world's highest point. On April 19, in definite defiance of orders from home, the two Westland machines made another flight to the summit of Mount Everest. The Houston-Westland was manned by Lord Clydesdale and Col. Blacker, and the Westland-Wallace by Flt. Lt. MacIntyre and Mr. A. L. Fisher, one of the cinematographers of the Gaumont-British Film Corporation.

The object of the second flight, as far as Lord Clydesdale's machine was concerned, was to obtain a series of overlapping vertical pictures which should provide a complete survey of the whole strip of country towards the summit of Everest, and Mr. Fisher was taking films almost continuously. Col. Blacker also took oblique photographs as well as the survey strips, and it is now considered that the expedition has amply fulfilled the objects for which it went out to India.

In this issue of FLIGHT we publish, by special arrangement with *The Times*, two of the photographs taken on the first flight over Mount Everest. These were, we understand, taken on Ilford panchromatic plates, and it will be noted that in one particularly the sky has photographed very dark, which seems to indicate that a red filter was used.

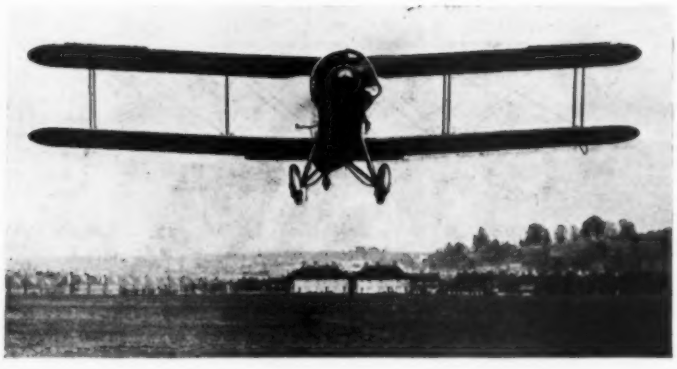
The expedition is also believed to have secured some long-distance photographs on Ilford infra-red plates, but these have not yet reached this country.

On the last flight the Williamson automatic camera appears to have worked perfectly in spite of the intense cold at the altitude at which most of the photographs were taken.

It is almost superfluous to say that both the Westland machines and Bristol "Pegasus" engines did their share in an irreproachable manner. The two Westland machines used by the expedition are, it will be remembered, of the "Wallace" type, or, rather, one is a standard "Wallace" with all military equipment removed, while the other, the Houston-Westland, is very similar. On the following pages will be found a detail illustrated description of the standard "Wallace" as used by the Royal Air Force. With the aid of this description our readers should be able to form a good idea of the two machines which have surveyed the world's highest peak.

Aerial Surveying in Australia

MR. DONALD MACKAY, of New South Wales, has organised and financed a survey of 100,000 square miles in Central Australia which, when completed, will enable a map of Australia to be completed. A "Percival Gull" is being imported from England to assist in this project.



Westland "Wallace"

ORIGINALLY designed as a private venture, known as the "P.V.6" (see FLIGHT, March 4, 1932), the version used in the British Royal Air Force has been given the name "Wallace," and is of the class known as "General Purpose." As the class title indicates, machines must be adaptable to a great variety of purposes, and the demands made are by no means easy to meet, as will be realised when we point out that "G.P." machines must have a flight range of at least 5 hr., must be capable of carrying a fairly heavy bomb load, must be equipped for taking photographs and for radio communication with ground troops and guns, must carry oxygen apparatus for high flying, must carry fixed and movable machine guns, and must be fitted with dual flying controls. Yet in spite of all these demands the "G.P." machine must have a good performance. Thus, somewhat paradoxically, the design of a general-purpose aeroplane has become very much a specialised task. The Westland Aircraft Works of Yeovil have had exceptional experience in the production of "G.P." machines, and it may be recalled that the "Wapiti" (Bristol "Jupiter") has been built in very great numbers (more than 500) for the R.A.F., the R.A.A.F., and the S.A.A.F. The "Wallace" incorporates everything that was found completely satisfactory in the "Wapiti," and a number of improvements besides.

How great an improvement on the "Wapiti" is the "Wallace" can best be indicated by a few figures. The "Wapiti" has a tare weight of 3,180 lb., while the weight of the "Wallace" is 3,520 lb. The gross weights are 5,300 lb. and 5,750 lb. respectively. The fuel and oil carried is the same in both cases, *i.e.*, 105 gallons of petrol and 10 gallons of oil, so that the useful loads (crew, military load and equipment) are comparable. That of the "Wapiti" is 1,213 lb., while the "Wallace" load is 1,323 lb. In other words, the "Wallace" carries about 100 lb. more than the "Wapiti." Thanks to the extra

THE WESTLAND "WALLACE": This three-quarter front view shows how closely the service machine resembles the version used on the Houston-Mount Everest flight. The engine is a Bristol "Pegasus." (FLIGHT *Photo.*)

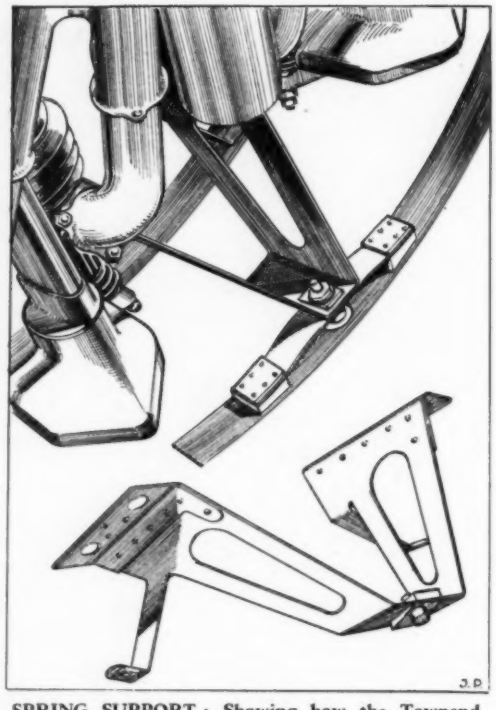
power of the Bristol "Pegasus" M.3 engine (555 b.h.p. as compared with the 460 b.h.p. of the "Jupiter") and the improved aerodynamic design of the "Wallace," the latest machine has a very much better performance. For example, the maximum speed of the "Wallace" at 5,000 ft. is 161 m.p.h., while that of the "Wapiti" is 139 m.p.h. at the same height. In the matter of climb also, the "Wallace" is very superior. For instance, the time to 10,000 ft. is 8.8 min. The "Wapiti" takes 11.5 min. The service ceiling of the "Wallace" is 22,800 ft. That of the "Wapiti" 19,300 ft.

The photographs, general arrangement drawings, etc., which we publish herewith show the general lines of the "Wallace." It will be seen that there is considerable similarity between it and the "Wapiti," but dimensionally the two differ a good deal. The only thing which they have in common is the wing span and area. The former is 46 ft. 5 in. and the latter 488 sq. ft.

Structurally also the "Wallace" follows the principle and methods which have been found so successful in the "Wapiti." The machine is an all-metal biplane, and can be supplied equipped with a number of alternative power plants, such as the Bristol "Pegasus," the Armstrong-Siddeley "Jaguar" or "Panther," or the Gnome-Rhone "Mistral." The Royal Air Force version is, as already stated, fitted with the Bristol "Pegasus" M.3.

The fuselage is constructed in the familiar Westland manner, of tubes of approximately square section. Joints are made by flat flitch plates and tubular steel rivets. In the forward portion of the fuselage the structure is of the rigid type, with bracing formed by diagonal tubes, while the rear fuselage portion is braced by swaged rods. This type of construction is extremely simple, and has been found very easy to maintain and repair.

The biplane wings are of the staggered, two-bay arrangement, and are of equal span and chord. They have corrugated steel strip spars of box section, and are detachable at top centre-section and fuselage. Ailerons of the Frise type are fitted to upper and lower planes, and Handley Page automatic wing-tip slots are fitted to the upper plane.



SPRING SUPPORT: Showing how the Townend cowling ring is carried on the "Pegasus" engine of the "Wallace." (FLIGHT *Sketch.*)

The inter-plane struts are of streamline section, and built-up steel construction. External bracing is by RAFwire. The tail organs are of duralumin construction.

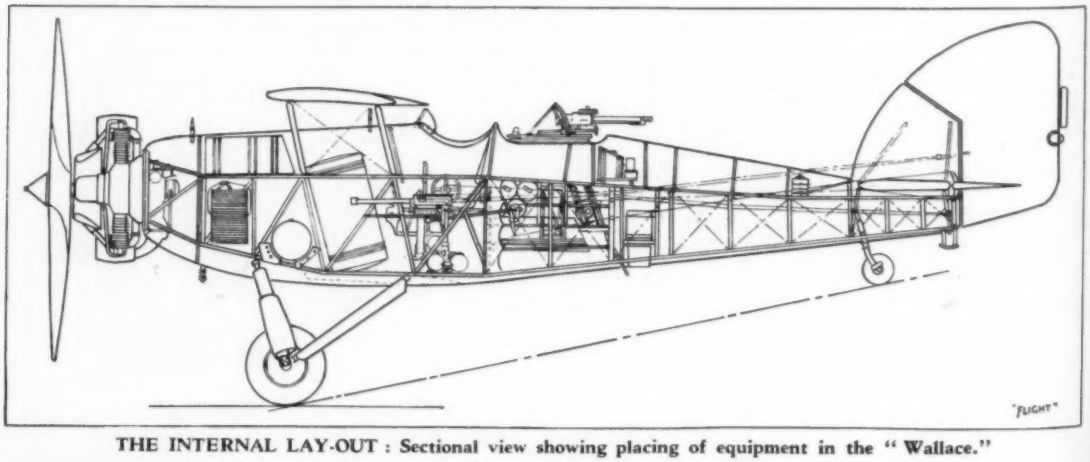
The covering of the front portion of the fuselage is of aluminium, arranged in the form of easily-detachable panels. In the "Wapiti" this covering was corrugated for stiffness, but in the "Wallace" a slightly heavier gauge has been used, and the corrugations are omitted. The rear portion of the fuselage is covered with doped fabric, as is also the wing covering.

An undercarriage of the "split" type is fitted, and from some of the views it will be seen that this is of relatively narrow track. It has, however, been found that the stability on the ground is sufficient. The telescopic legs of the undercarriage are of a special Westland patented type, and possess great shock-absorbing qualities. The undercarriage wheels are provided with brakes, and these are so arranged that they can be used together or independently. They are operated by toe pedals on the rudder bar, and can be locked on by a hand brake lever in the cockpit. A reduction of 50 per cent. in landing run is gained by applying the brakes simultaneously. The wheels are partly enclosed in "spats."

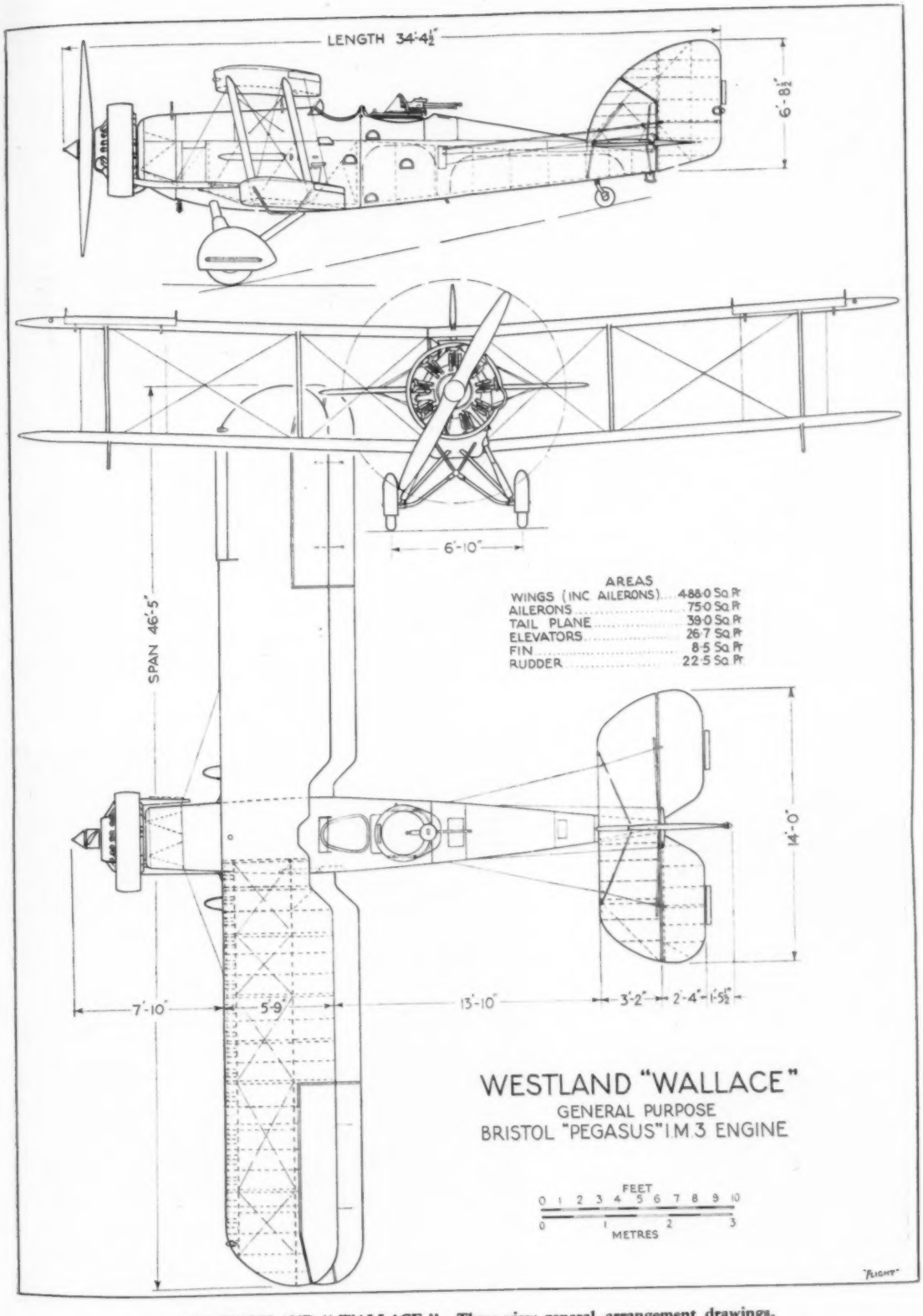
A low-pressure castering tail wheel takes the place of the old type of tail skid, and in conjunction with the wheel brakes makes manœuvring on the ground quite easy, and avoids the need for a separate tail trolley.

The "Wallace" can also be produced as a twin-float seaplane, and the fittings on the fuselage are arranged to take either wheel or float type. Skis can also be fitted if the machine is to be used in localities where snow-covered ground or frozen lakes are found. The floats are of duralumin construction, with straight rounded top and stepped vee bottom. Water rudders are fitted to the heels of the floats, and are connected to the rudder bar. At 5,850 lb. gross machine weight, the excess buoyancy is 100 per cent.

The Bristol "Pegasus" engine is fitted in the nose of the fuselage, and is provided with a radial exhaust ring which, in conjunction with the Townend cowling ring, materially decreases the drag of the engine. The petrol tanks are of welded aluminium, anodically treated against



THE INTERNAL LAY-OUT: Sectional view showing placing of equipment in the "Wallace."



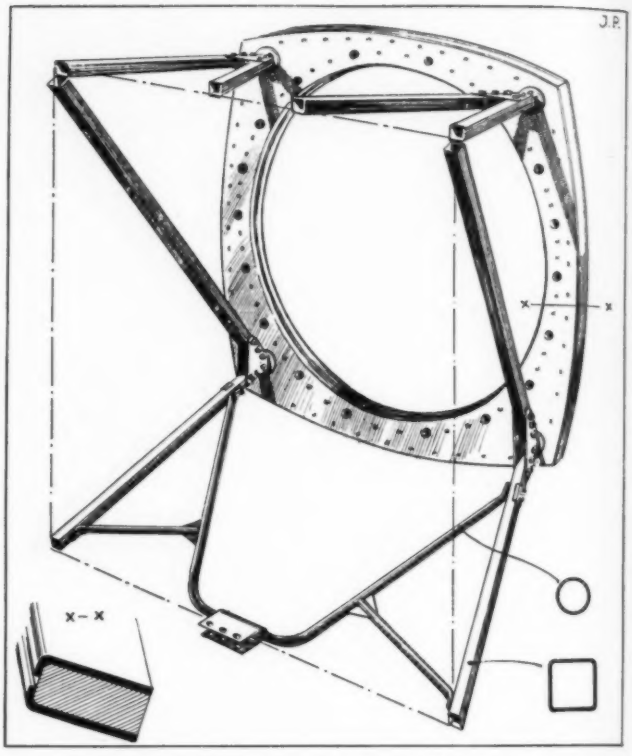
THE WESTLAND " WALLACE " : Three-view general arrangement drawings.

corrosion and painted. The main tank, which is of cylindrical shape, is placed in the fuselage, approximately on the centre of gravity, so that as its contents are consumed the trim of the machine is not altered. The auxiliary petrol tank and the oil tank are placed farther forward in the fuselage. A combination of pressure and gravity petrol feed is employed. The total tank capacity is 131 gallons, and the oil capacity 14 gallons. The oil is cooled by an oil radiator. If the "Wallace" is required for long-distance work, a considerable extra quantity of fuel can be carried. In that case the bombs under the lower plane are omitted, and streamline petrol tanks fitted instead, each of 60-gallon capacity. The range then becomes 1,000 miles.

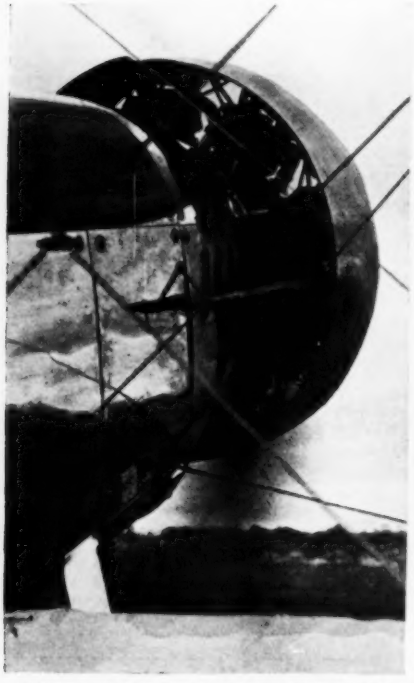
The pilot's cockpit aft of the top plane is so situated that a very good view is obtained. The deck fairing in front of the pilot, it will be seen, slopes away to the engine, and from the cockpit the upper part of the Townend ring is seen "edge on," so that it does not obstruct the view greatly. The pilot's seat is so arranged that it can be raised and lowered, and the foot bar has an adjustment to enable pilots of different height to be suited. Particular care has been taken to exclude draught from the cockpit.

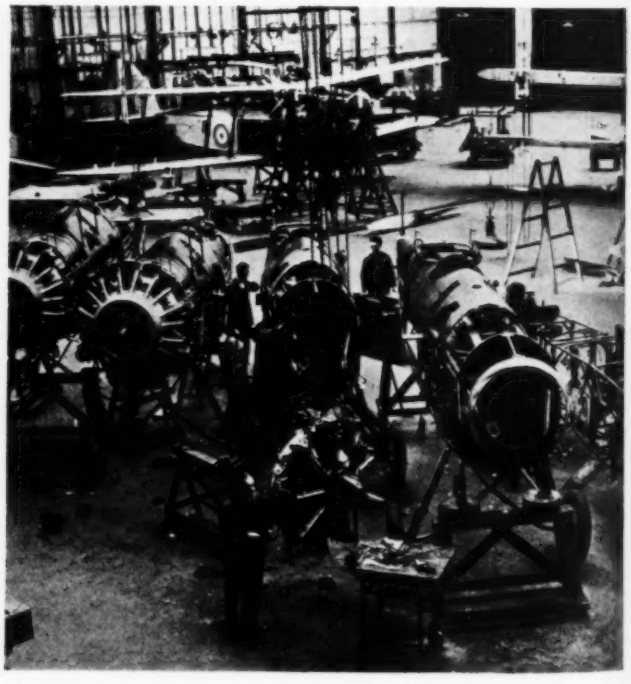
To relieve as much as possible the pilot during a long flight, provision has been made not only for trimming the machine in a fore and aft sense by means of a trimming tailplane operated by a wheel in the cockpit, but the machine can also be trimmed directionally by a rudder bias gear on the rudder bar.

In the observer's cockpit, close behind that of the pilot, there is a Scarff gun ring for the movable machine gun. The observer's seat is of the "tip-up" type, and the floor can be moved out of the way when the prone bomber's position is used. The field of fire from the rear gun is very wide, and by using the firing steps on each side of the floor, the gunner can fire vertically downwards on either side.

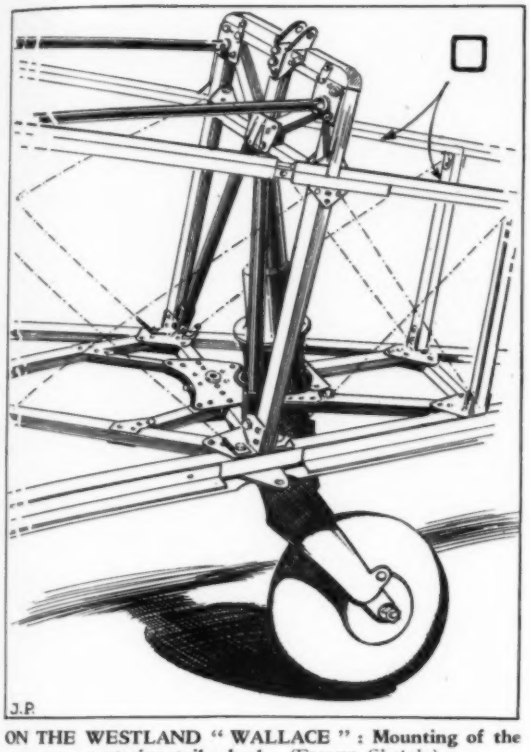


THE ENGINE SUPPORT IN THE "WALLACE": Square-section tubes are used extensively in the fuselage construction. (FLIGHT *Sketch.*)





THE "WALLACE" IN PRODUCTION: On the right a small section of the works at Yeovil, with fuselages in various stages of construction. On the left a view through the Townend ring which surrounds the "Pegasus" engine. (FLIGHT *Photos.*)



ON THE WESTLAND " WALLACE " : **Mounting of the castering tail wheel.** (FLIGHT *Sketch.*)

Parachute and ammunition racks are fitted, and a camera may be mounted on the fuselage floor, behind the cockpit, and operated by remote control. To leave the cockpits as unencumbered as possible, especially with parachute jumping in view, the control cables are taken, in the vicinity of the cockpits, through the inside of the fuselage fairings, *i.e.*, between the primary structure and the outer covering. To trim the machine when no observer is carried, there is a small stowage space just in front of the tail, into which suitable weights can be loaded.

The total weight of bombs which can be carried is 500 lb. in normal service. But for special purposes this load can be, and has been, increased to 1,000 lb.

WESTLAND " WALLACE "
Bristol " Pegasus " M.3

Main Dimensions

	ft.	in.	m.
Length o.a.	34	2	10,4
Wing span	46	5	14,1
Wing chord	5	9	1,75
Wing area	488 sq. ft.		(45,4 m.²)
Wheel track	6	10	2,1

Weights, etc.

	lb.	kg.
Tare weight	3,520	1 595
Fuel (105 gallons)	810	367
Oil (10 gallons)	97	44
Crew, load and equipment ..	1,323	604
Gross weight	5,750	2 610
Wing loading	11.75 lb./sq. ft.	(57,4 kg./m.²)
Power loading ..	10.35 lb./h.p.	(4,7 kg./CV)

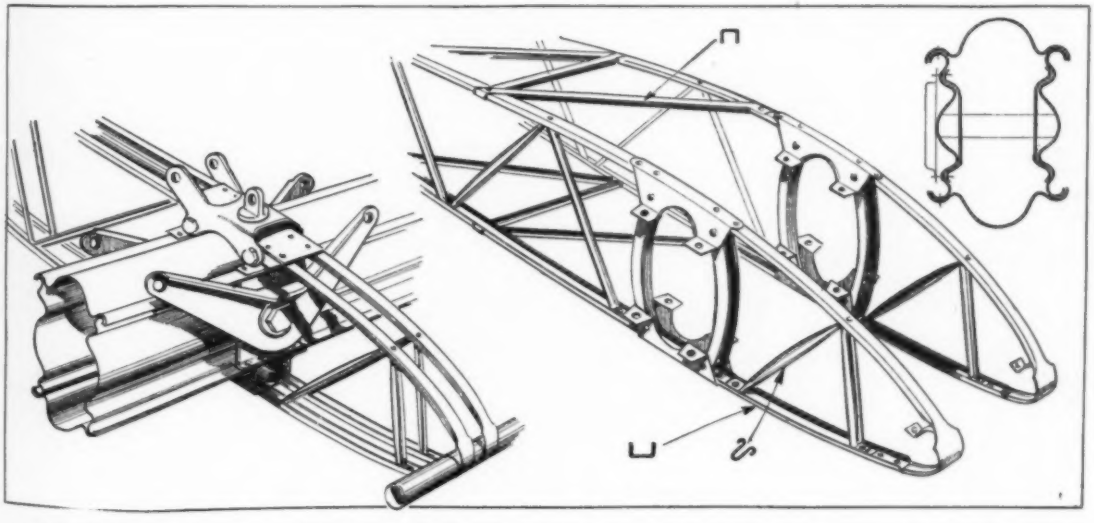
Performance

Top speed at 5,000 ft. ..	161 m.p.h.	(259 km./h.)
Top speed at 10,000 ft. ..	157 m.p.h.	(253 km./h.)
Top speed at 15,000 ft. ..	150 m.p.h.	(242 km./h.)
Stalling speed	60.5 m.p.h.	(97 km./h.)
Service ceiling	22,800 ft.	(6 950 m.)
Absolute ceiling	24,300 ft.	(7 400 m.)
Time to 5,000 ft.	4 mins.	
Time to 10,000 ft.	8.8 mins.	
Time to 15,000 ft.	15.8 mins.	
Time to 20,000 ft.	28 mins.	

The performances given above refer to standard atmosphere. The effect of bombs or other equivalent resistances will slightly reduce the performances.

The forward air-cooled gun is, of course, fixed and fires through the airscrew disc, a Constantinesco interrupter gear being fitted. The gun is completely enclosed in the port fuselage fairing, but is within reach of the pilot for clearing stoppages, etc. An automatic air-cooled gun is normally fitted on the Scarff gun ring in the rear cockpit, but duplicate guns can be mounted if desired.

In conclusion, it may be pointed out that the " Wallace " has, of course, been designed to the load factors laid down



SOME WING DETAILS : **On the left a steel spar with its rib, strut and bracing attachments. On the right, details of ribs and spar.** (FLIGHT *Sketches.*)

EASY INSPECTION : " Zip " fasteners are used in the fabric covering of the rear portion of the fuselage. (FLIGHT *Photo.*)

by the British Air Ministry, and complies with these factors both for normal flying at a gross weight of 6,300 lb. and for aerobatics at a gross weight of 5,650 lb. The original machine was type-tested at the Aeroplane and Armament Experimental Establishment at Martlesham Heath, so that foreign purchasers may place orders for the " Wallace " with all the confidence which " passed by Martlesham " engenders.

REMAINS OF SQD.-LDR. HINKLER FOUND

AFTER nearly four months the remains of Sqd. Ldr. Bert Hinkler's machine have been found on the slopes of the Pratanagno Mountains, in the Appenines, north-west of Arezzo. From various reports it appears that on Friday, April 28, a party of charcoal burners found the wreckage of a machine, with the body of the pilot lying 300 yards away and below. Local authorities were immediately informed, and on investigation of various documents found lying near the crash, it was found that the mutilated body must be that of Sqd. Ldr. Bert Hinkler.

The Italians proceeded to bestow every honour possible upon the remains of a gallant airman, for whom they had a special regard. The body was conveyed by motor to Florence, where it was met by a volunteer guard of honour, composed of Italian aviators. In Florence it lay in state in the Aero Club while arrangements were being made for the funeral, and homage was paid by officials representing various people and public bodies in Italy.

On May 1 the funeral took place at Florence in the Protestant Cemetery of Degli Allori, where the body was temporarily interred in a crypt. It was accorded full military honours, the British nation being represented by Col. Stevens, the Military Attaché in Rome, on behalf of Sir Ronald Grahame, and by Major Charles Maclean, the British Consul at Florence. General Balbo, ever ready to honour aviators of any nation, represented the Italian Government. Wreaths were sent by the Italian Government, the Aero Club of Italy, the British Colony at Florence, and by other Italian authorities.

A touching tribute was paid to the memory of the dead airman by the inhabitants of the village near which the crash occurred. The women insisted on supplying a Union Jack, made by themselves, and a local band had gone to the special trouble of learning the British National Anthem to play as the coffin was carried away.

The Australian Minister in London has been advised that Mrs. Hinkler desires the body of her husband brought to Australia for interment at Brisbane or, at the wish of the Commonwealth, in Canberra.

Sqd. Ldr. Hinkler's log, which was found near the crash, shows that he had kept to his course, but must have encountered bad weather, for it appears he took over eleven hours to cover the 750 miles from England. An obituary notice of Sqd. Ldr. Bert Hinkler appeared in FLIGHT for February 16, so we can only add that he died as he would have wished in an attempt to achieve something worth while. It is, perhaps, as well that his body has been found, for it will put an end to the many stupid and disquietening rumours and theories which have been put forward from time to time. An expert examination will, of course, be made of the wreckage.

" City of Liverpool " Crash

MAJ. ROBERT HOBART MAYO, in giving evidence at the inquest on Mr. Voss, stated that the whole front portion of the *City of Liverpool* fell separately and was completely gutted by fire. The petrol tanks had been smashed in, the contents being splashed over the wreckage. The rear portion of the machine fell some six yards away from the main wreckage, and was not so completely burned as the front. One portion of the machine had fallen 50 yd. away and was not burned. There was nothing to indicate that there had been any mechanical failure. It seemed fairly obvious, after a careful study of the wreckage, that the fire started in the rear, causing the tail unit and half the fuselage to snap off when the machine was about 200 ft. from the ground.

The inquest on Mr. A. Voss, a victim of the *City of Liverpool* crash, was concluded on April 27. An open verdict was returned, the jury giving their opinion that death was due to injuries caused by falling from the machine, but there was no evidence to say why or how he left it.

Missing French Seaplane Found

THE French seaplane which had been missing since April 23, while flying from Corfu to Naples, was found on April 28 in mountainous country near Saracena, in the North of Basilicata, about 35 miles north of Cosenza. The machine was wrecked and of the eight occupants only three were found alive. From an account given by one of the survivors it seems that the aeroplane hit a tree while flying in thick clouds which were down on the hills. A heavy snowstorm was raging, and so the three survivors deemed it wisest to stay by the machine, where they had to undergo the unfortunate experience of watching others of the passengers slowly die.

THE machine shown in these FLIGHT photographs is the latest Hawker "Fury." It differs from the standard machine in having tapered wings and vee interplane struts. The engine fitted is an improved Rolls-Royce "Kestrel" water-cooled "V."

The machine has been produced as part of the Air Ministry's programme of developing experimental types with improved performance, and the new "Fury" is credited with a speed (height not specified) of about 250 m.p.h. with full military equipment.

DEATH OF AIR CHIEF MARSHAL SIR GEOFFREY SALMOND

WITH deep regret we learn of the death on Thursday, April 27, of Air Chief Marshal Sir William Geoffrey Hanson Salmond, K.C.B., K.C.M.G., D.S.O., Chief of the Air Staff, at the King Edward VII Hospital for Officers, London. Sir Geoffrey succeeded his brother, Sir John, as Chief of the Air Staff on April 1, but was prevented by illness from taking up the appointment.

The brothers Salmond have been intimately connected with the growth of the R.F.C. and the R.A.F., and each of them in turn has held pretty well every important air command. Sir John led Sir Geoffrey all through their careers, and so it was not always realised that Sir Geoffrey was the elder of the two. They were sons of the late Major General Sir William Salmond, R.E., who died last November. Geoffrey was born on August 19, 1878, and John three years later. Geoffrey was educated at Wellington and Woolwich, while John went to Sandhurst.

Geoffrey Salmond was commissioned in the Royal Artillery in 1898 and served therein until 1913. He saw active service in the South African war, took part in the relief of Ladysmith, and received the Queen's Medal with seven clasps. He did not remain in South Africa until the end of the war, for in 1900 he was sent to China and gained another medal for the operations against the Boxers. During his Army years he graduated at the Staff College at Camberley, and in 1910 he married Miss Margaret Carr.

In August, 1912, John Salmond joined the newly formed Royal Flying Corps, and soon after Geoffrey followed his brother's example. On February 18, 1913, he was given the R.Ae.C. certificate No. 421, and was then sent to the Central Flying School at Upavon to qualify for his "wings." He was then a captain, and also a Staff College graduate, both qualifications which were rare among the flying officers, and so he was made a G.S.O.3 at the Directorate of Military Aeronautics at the War Office. When the great war broke out, he went to France as Staff Officer to Major General Sir David Henderson. In this capacity his artillery experience came in very useful. In the early attempts to arrange air observation for our batteries, it was found that the Army methods of working from a map were unsuitable, and when a flying officer drew up a new form of map for the purpose, Maj. G. Salmond was able to secure its general adoption. In January, 1915, he was sent home to take command of No. 1 Squadron, which was then forming, and he brought it out to France in time for it to take part in the battle of Neuve Chapelle on March 10, 1915. The squadron then went up to the Ypres Salient to take part in the fighting for Hill 60, and there Salmond made still further use of his artillery experience. His squadron was given the task of locating enemy batteries, and it was very successful in doing so. Salmond co-operated with the artillery of the 2nd Army Corps in devising a system of quick signals from the air to the batteries, which enabled them to open fire quickly on any conspicuous target suddenly spotted by an aeroplane. One morning Salmond was awakened at dawn by heavy firing, and at once sent up Capt. Ludlow-Hewitt to see what had happened. The latter found a German attack in progress and signalled for the guns to open on the attackers. There was no response, and it turned out that new batteries had taken over, which did not understand the signal. Salmond then took the initiative in getting a uniform system of signals from air to batteries adopted throughout the Army.

Later in 1915 Salmond was promoted to Lieut. Col. and was sent to command the 5th Wing, R.F.C., in Egypt. In July, 1916, he was made Brig. General and given command of the R.F.C. in the Middle East, a post which he held with brief intervals until the end of 1921. At the end of 1916 he took part in the operations in Sinai and for his "magnificent personal example" (to quote the *London Gazette*) he was awarded the D.S.O. During his command in the Middle East he had to provide air co-

CARRYING THE COFFIN INTO THE CHAPEL : On the left can be seen Gen. Sir W. Thwaites, Lord Trenchard, Sir Tom Webb-Bowen and Admiral Sir E. Chatfield. (FLIGHT *Photo.*)

HONOUR FROM THE NATIVES OF THE WORLD: The foreign Air Attachés at the funeral. (FLIGHT *Photo.*)

operation for the military force in East Africa. Finally, he was responsible for the splendid work of the R.F.C. during Allenby's victorious advance in Palestine. For days on end our fighters (mostly "Camels") patrolled over the Turkish aerodromes and kept the enemy machines aground; and when the cavalry and infantry finally drove the Turks back, the air squadrons bombed the flying Turks with great slaughter and were largely responsible for the complete destruction of one Turkish Army in the mountain passes.

Even before the Armistice was signed, Geoffrey Salmond was looking ahead to the day of civil flying. He had a string of aerodromes prepared between Cairo and Capetown, and intended to send a flight of R.A.F. machines across Africa to fulfil, or more than fulfil, the dream of Cecil Rhodes. This route was used by Sir Pierre Van Rynefeld and Sir Christopher Brand on their first flight to South Africa, and afterwards for several years a R.A.F. formation used to fly annually to South Africa and back, until Imperial Airways took over the trail which had first been blazed by Geoffrey Salmond.

In December, 1918, Maj. Gen. Salmond, accompanied by Maj. Gen. Borton, flew in a Handley Page Night Bomber from Cairo to Baghdad, thence on to Karachi, Delhi and Calcutta. This was the first practical demonstration of the use of the aeroplane for communications between different countries and protectorates of the Empire.

In 1922 Sir Geoffrey, who had been made a K.C.M.G. in the Birthday Honours of 1919, and had also been promoted to Air Vice-Marshal, became Air Member for Supply and Research on the Air Council. In this position he took great interest in steps to promote the safety and regularity of civil flying, which was then struggling through a very bad time, much accentuated by the frequency of engine failure and consequent forced landings.

In 1927 Sir Geoffrey returned to the East, being given the important command of the R.A.F. in India. He travelled out in the "Hercules" in which Sir Samuel and Lady Maude Hoare made the flight which was intended to open the Imperial Airways service to Karachi. This was the first occasion on which an A.O.C. had travelled out by air to take up an overseas Command. While Sir Geoffrey was in India the revolution in Afghanistan broke out, and it was necessary to arrange for R.A.F. "Victorias" to evacuate the British Resident and all other foreigners, to the number of over 300, from Kabul. Sir Geoffrey made all the necessary arrangements with his usual efficiency. In July, 1929, he was promoted to Air Marshal.

From India Sir Geoffrey returned home in September, 1931, to take up the second most important post which is open to an air officer, that of A.O. Commanding-in-Chief Air Defence of Great Britain. He was only the third man to hold that post. The first had been his brother Sir John, and the second Sir Edward Ellington. In January, 1931, he was promoted to Air Chief Marshal. Later it was announced that Sir Geoffrey had been selected to succeed his brother as Chief of the Air Staff on April 1 of the present year. This announcement was the culminating point of his career. He and his brother each were given the two most important appointments in the Royal Air Force, and the Salmond family had indelibly stamped its name upon the Service. Just before the end of March Sir Geoffrey was taken ill. He actually became Chief of the Air Staff, but was not able to act. Sir John had to carry on for him. On April 27 there came to an end a really great career in the service of the King. To Lady Salmond and her son and three daughters we beg to offer our respectful sympathy.

Expressions of Sympathy

Among the expressions of sympathy received by the Secretary of State for Air and the Air Council on the death of Sir Geoffrey Salmond, are messages from the French Air Minister, the Australian Air Board and the Royal Australian Air Force, the First Lord and the Board of Admiralty, the Secretary of State for War and the Army Council, the Secretary of State for India, Lord Weir, formerly Secretary of State for Air, Marshal of the Royal Air Force Lord Trenchard and the Royal Aero Club.

Sympathetic and appreciative messages have also been received from the aircraft industry.

The funeral took place on Monday, May 1. H.M. the King was represented by Air Chief Marshal Sir Edward Ellington, Principal Air Aide-de-camp to His Majesty.

The Duke of York was represented by Com. H. G. Campbell, D.S.O., R.N.

The pall-bearers were as follows:—

Marshal of the Royal Air Force Lord Trenchard,
Air Marshal Sir Robert Brooke-Popham,
Air Marshal H. C. T. Dowding,
Air Vice-Marshal Sir Tom Webb-Bowen,
Air Vice-Marshal R. H. Clark-Hall,
Air Vice-Marshal Sir Edgar Ludlow-Hewitt, representing the R.A.F.,
Admiral Sir Ernle Chatfield, representing the Royal Navy, and
Gen. Sir William Thwaites, representing the Army.

The funeral procession left Hyde Park Gardens (East End), W.2, at 11 a.m., for St. John's Church, Southwick Crescent, Hyde Park, W.2, where the funeral service took place.

Japanese Air Pioneer Dead

THE death has occurred at Tokio of Lt. Gen. Gaishi Nagaoka, at the age of 75, a pioneer of aviation in Japan. He claimed to possess the longest moustachios in the world.

The Air-speed Record

THE International Aeronautical Federation has officially confirmed the Italian claim to the world air speed record of 682.403 kilometres an hour (423.76 miles) set up by Warrant Officer Agello over Lake Garda on April 10.

THE SPECIAL HEINKEL HE.64 : Fitted with a " Gipsy III " engine, this machine has been acquired by the Handley Page Company for experiments in fully slotted flight. (FLIGHT *Photo.*)

THE HEINKEL EXPERIMENTAL He.64

Yesterday Handley Page, Ltd., gave a demonstration at Radlett of the Heinkel He.64 slotted and flapped monoplane, fitted with a special undercarriage in order to enable full use to be made of the machine's ability to land at low forward speed and following a very steep gliding angle. An account of the demonstration will be published next week. In the meantime the following notes on the special machine may be of interest to our readers

WHEN we published, in our issue of September 9, 1932, an account of a demonstration of the Heinkel He.64 at the Handley Page aerodrome at Radlett, we made the following comments: " It can ,we think, be said that the Handley Page slot has outstripped the technical development of the aircraft. The Heinkel He.64 will hang in the air at 38 m.p.h. or so, but at a very large angle. To alight at that angle would result in serious damage to the machine, as the tail skid would hit first, and the undercarriage then come down with considerable force, probably resulting in a crash. Consequently the speed at which the machine can safely be put down is considerably higher than the minimum speed at which it can hang in the air (with engine running). . . . Before the fully-slotted aeroplane is a practical proposition. . . . it will be necessary to incorporate . . . an undercarriage capable of absorbing the shock of a landing at high rate of sinking."

Quite obviously the Handley Page company was of the same opinion, and the He.64 (" Gipsy III ") which has now arrived in this country has had a special undercarriage designed for it by the Heinkel designers. This undercarriage, illustrated in one of our photographs, and also visible in the first photograph of the machine which we published on March 16, 1933, is claimed to be capable of withstanding safely a vertical rate of descent of 13-14 ft./sec. Its compression rubber-oleo telescopic legs have a stroke of more than 1 ft., and the ground angle is large, in the neighbourhood of 13 degrees. In order to give ample directional control at very large angles, the area of the rudder has been increased by approximately 25 per cent. in the Handley Page He.64, as compared with the standard machine.

These changes, and the substitution of a De Havilland " Gipsy III " engine for the 150 h.p. " Argus " engine with which the competition He.64's of last year were fitted, constitute the chief alterations. The Heinkel company, of Warnemünde, does not, we are informed, intend to fit the new type of undercarriage as standard for their machines, as they have found that the undercarriage with which the competition machines were fitted serve well enough, and the taller and rather more complicated undercarriage of the Handley Page He.64 is presumably heavier and of rather greater drag.

As a description of the standard He.64 was published in the issue of FLIGHT mentioned above, we do not propose to go into details in these notes, but it is worth recalling that the machine, which will be used for research and experimental purposes in this country, is fully slotted and flapped. The slots extend from the wing root to the wing tip, but are divided into an outer and an inner slot. Both outer and inner slots are connected to their respective trailing edge flaps, and both open automatically (although the inner, or lift slots, can be locked in the closed position it desired), the linkage ensuring that as the leading edge slot opens, its trailing edge flap is pulled down. The trailing edge flap connected to the wing tip slot is lowered but a few degrees by the slot, a considerable angular movement still being available for aileron control.

When fitted with the 150 h.p. " Argus " engine the He.64 has a speed range from about 33 m.p.h. to approximately 152 m.p.h., or 4½ to 1. This is far and away the greatest speed range of any practical aeroplane, but appears to be exceeded by the latest Autogiro, which has a minimum speed in the neighbourhood of 20 m.p.h. and a maximum speed of a little over 100 m.p.h. (with the 80 h.p. " Genet " engine).

AN ENERGY ABSORBER : The special undercarriage of the He.64 is capable of resisting the shocks of a sinking rate of 13 ft. per sec. The stroke of the leg is more than 1 ft.

FROM THE CLUBS

HANWORTH PARK, N.F.S.

On Wednesday, April 26, the British Hospitals Air Pageant was held at Hanworth. Flt. Lt. Pugh performed some excellent aerobatics on the Miles "Satyr," and Flt. Lt. Hill made a parachute descent. Mr. C. W. A. Scott and Mrs. Victor Bruce were much in demand for joyriding. An amusing event was the attempted slaughter of a Dragon (Mr. Lowe-Wylde on the Heath Robinson painted "Drone") by St. George on horseback. Among spectators was Mr. and Mrs. Cheng, who have recently arrived in England from the East. On Sunday the Master of Sempill flew down to the Island of Herm in the Channel Islands, later flying over to Sark. Other cross-country flights during the week included Flt. Lt. Wilson and Mr. Anson from Crondall to Canterbury and return, Mr. Adinsell and Mr. Bramson to Gloucester, Flt. Lt. Wilson and Mrs. Anson to Liverpool and return, Lt. Kidston to Portsmouth and Mr. Adinsell to Eastbourne. In spite of the bad weather Club flying has been fairly brisk and Sub-Lt. Gretton successfully carried out a first solo. On Tuesday, April 25, Miss Delphine Reynolds left in her "Redwing" for a solo flight to France and Germany. The Handley Page "Hare" is nearing completion in the workshops, and on Thursday, April 27, the new wingless "Autogiro," which was built in the N.F.S. workshops, was demonstrated to the Press. Among the firms to take accommodation in the factory sites adjoining the aerodrome are the British Klemm Aeroplane Co. and the Empire Air Services, Ltd. B.A.C., Ltd., are working at full pressure on the production of the "Drone."

The last, but by no means the least enjoyable, of the season's dances was held in the club-house on Saturday night, April 29. A large and enthusiastic gathering had dinner there before, but many more came for the dancing afterwards. This was not a fancy-dress occasion, nor was it enlivened with any professional cabaret turns or similar amusements, but nevertheless it was entirely successful in every way and proved only too well the peculiarly able organising ability possessed by the secretary of the club and all those members of the staff upon whom depends, to such a large extent, the social entertainment of the members. The "Novelty Three" Orchestra was one of the best we have heard for a long time. Unlike so many modern orchestras, they actually seemed to realise that rhythm and time are important if dancing is to be made a pleasure instead of a mere foot-shuffling exercise accompanied by much pushing, and long faces similar to those which may be seen in London at the more fashionable night clubs.

There is nothing of that at Hanworth. The dancing goes with a swing and the members really seem to enjoy it. They actually laugh and talk while they are dancing, a thing very seldom seen nowadays, and undoubtedly the tuneful, rhythmic music supplied, was to a large extent responsible for this. Mr. and Mrs. S. H. Light very sportingly did some exhibition dancing, which was applauded in the manner it deserved. It is no easy task to get up and dance for the edification of one's fellow members, but this couple were such undoubted experts that they could well afford to disregard their natural diffidence to parade their skill.

It is rather a pity that this was the last dance, but at least it was not the last occasion upon which members could entertain their friends to dinner at the club. Few places are more pleasurable, and certainly no flying club has gardens and grounds anywhere approaching those of Hanworth. One might be in the depths of the country there, and a walk round the grounds after dinner, among the extremely varied collection of trees and shrubs, particularly now that the rhododendrons are coming into bloom, makes an evening there doubly enjoyable. One cannot help thinking that if every member were to make a habit of doing their entertaining at Hanworth, the membership of the club would increase by leaps and bounds.

GRAVESEND SCHOOL OF FLYING

Gravesend School of Flying is progressing very steadily and considering the unfortunate flying weather two weeks ago it has done a very creditable amount of instruction. On Sunday, April 16, Sir Alan Cobham visited the Aerodrome, and had a very satisfactory day, the weather was ideal for flying, and also for the spectators. It was very lucky as the weather broke on the following day. The School machines—two "Moths" and the "Desoutter"—did practically as much flying as Sir Alan's. Unfortunately, the C. of A. for the School Avro "Avian" was not through in time. On the occasion of Sir Alan Cobham's visit the Club was opened, and the management can now offer meals, etc., and accommodation to visiting pilots and friends.

Last week the School enjoyed very nice flying weather, and took full advantage of it. Messrs. Hinvest, Florence,

DOWN SOUTH : The new clubhouse at Portsmouth situated in its own fruit garden ; it will make a delightful "port of call" at tea time. The R.N. Flying Club also operates here. (FLIGHT *Photo.*)

and Rodgers have joined the School for flying instruction. Messrs. Sassoon and Humphries have joined as flying members. Mr. Mitchell completed his "A" licence tests very satisfactorily. Numerous visitors have been to see the new club-house. The grass seed which has been sown on the part of the aerodrome now not in use has begun to grow, so that in the course of a few weeks the whole aerodrome will be available for use; this will bring its size up to 153 acres, which, together with its excellent approaches, should make landing very easy for budding pilots. The night markings of the aerodrome have now been completed, consisting of two lights on top of the control tower, one on the east side and one on the west; these lights are visible for at least 10 miles, and when coupled with those of the river should make an excellent guide for pilots passing or coming into the aerodrome by night.

Gravesend Aviation, Ltd., have issued a booklet describing their aims and objectives. They cater for the man who is entering civil aviation to make a career for himself, and for the private owner who wishes to fly with the least possible expense. Their Managing Director, Mr. H. Gooding, holds important Local Government appointments, and has the interests of aviation very much at heart. Flt. Lt. P. H. Smith, the Chief Instructor, besides being a fine pilot, is a man who studies each pupil from a psychological point of view, and thus applies to each the best methods of instruction.

BROOKLANDS

First soloist this week, Mr. F. D. Sawyer, is a member of the College of Aeronautical Engineering. It is gratifying that many of the College students are taking an interest in practical flying, as distinct from the technical side, and are under instruction at Brooklands. Several new pupils have joined and commenced instruction. Capt. Ledlie has returned in the Brooklands Airways Junkers from the tour mentioned last week. An appointment which will prove popular is that of Capt. R. Y. Bush—who is well known at Brooklands—as Secretary of the Brooklands Aero Club. Another Dawn Patrol will take place next week. Applications for machines or places in the formation should be sent as early as possible; don't forget the date, *May 7!* Mr. T. Van Marken has bought a "Tiger Moth."

MAIDSTONE AERO CLUB

The Club is now embarked on its first real season, and already the interest shown has been encouraging. On Saturday, April 22, Mr. M. S. Houdret passed his "A" licence tests, and on the following day Mr. H. J. Tutt did his first solo. The navigation classes have attracted a great deal of interest, and already seven members are attending. From next week onwards the Maidstone Flying School will have one of the new B.A.C. "Drones" for hire for solo flying at a cost of 18s. per hour. On Saturday, June 17, a Charity Air Display will be held; on Saturday, July 22, the Official Opening will take place; on Saturday, August 5, an All Women's Air Rally; and on Saturday, September 9, a Kent Air Pageant will be held. On Sunday, May 7, the monthly "At Home" will be held, and it is hoped that a large number of members and guests will attend. The Club premises are undergoing a spring overhaul and certain extensions are being carried out, but they will in no wise interfere with the usual running of the Club.

BRISTOL AND WESSEX AEROPLANE CLUB

The Bristol and Wessex Aeroplane Club are again offering two free flying scholarships. A maximum of 50 candidates will be tested in the air. The scholarships are for men only, and candidates must reside within 30 miles of the Bristol Airport. Two new pupils started training for "A" licences during the week, and Miss Joan Medlicott, who secured an "A" licence at Bristol two years ago, has started training for a "B"; she also holds the "A" and "C" ground engineer's licences. The Club aircraft completed over 130 hr. flying during April, as compared with 96 hr. for April, 1932.

LONDON AEROPLANE CLUB

In spite of the change in the weather the Club machines have been fairly busy and 45 hr. have been flown during the past week. Messrs. B. Davison, H. Whitby and G. Goddard have been solo and Mr. E. W. Gray has taken his "A" licence. Among new members the Club is pleased to welcome Miss Scott, Miss Brotherton Ratcliffe, Messrs. E. Brotherton Ratcliffe, M. Grundy, G. Westgate and Dr. Mintzman. Cold suppers are served every evening.

LYMPNE

Bad weather has spoiled what would otherwise have been a record month for the Club in the way of instruction, but even so the total is very encouraging. There are rumours of a flying meeting at the Club on the week-end of June 23, and it is hoped that many foreign machines will be present. A race in which they will be eligible to enter will be organised. On May 14 the "Dragon" will visit the Club for demonstration.

NORTHAMPTONSHIRE AERO CLUB

Sywell has been very busy during the past week on the flying side; Mr. R. Castell is the week's first soloist, and is now on the way to his licence. Seven machines from the Midland Aero Club visited Sywell on Sunday, and a large number of machines were lined up during the afternoon, making an impressive show. Lord Willoughby de Broke, the Chairman, came over on the same day in his "Puss Moth," also Mr. Mark Lacayo, on a Comper "Swift." On the morning of the 30th, Sywell machines are taking up a new rôle, enacting the part of bombing machines and dropping flour bags on members of the Bedford Divisional Signals during a practice retiring movement. On Wednesday Mr. S. A. Thorn did a rush taxi trip to Ludlow, taking a Mr. Sumner to ride in a point to point. Mr. Sumner's car broke down at the wrong moment and this was the only way he could get there in time. The staff of the aerodrome have been busy at odd moments in painting the hangar white, which will make Sywell much easier to spot from the air [We hope others will follow suit with this scheme which we have always advocated.—ED.] Capt. G. R. D. Shaw kindly lent the spray-

VISION: For view in all important directions, comfort, absence of draught and noise, the "pusher" of pre-war days has never been exceeded. Here is Shackleton and Lee Murray's version of what a modern pusher should be. The engine is a 60-h.p. Hirth 4-cylinder in-line inverted air-cooled. The production model will be fitted with the Pobjoy "R" engine. Standing by the machine is Lee Murray (nearest the fuselage) and Shackleton. A flying picture is on the next page. (FLIGHT *Photo.*)

SEEING WHERE ONE IS GOING : A flying view of the Shackleton-Lee Murray S.M.1, in which the range of vision from the pilot's seat is well brought out. (FLIGHT *Photo.*)

ing apparatus and also put in much time painting not only the hangar but also most of himself! The lecture in the clubhouse last Wednesday, on Meteorology, was well attended ; this week's subject, Navigation.

HULL AERO CLUB

At considerable expense the Committee have provided a first-class loud-speaker equipment for the entertainment of members. The Lord Mayor has kindly consented to open the equipment on Saturday, May 6, at 8.15 p.m. The arrangements for the visits to Scarborough on May 14, and Yeadon on June 4, Whit-Sunday, are similar to those made for Nottingham last year. The inclusive charge (luncheon and tea), including a " Petrol Pool " for the benefit of car owners, will be 5s. per head. On May 14 cars will parade on the Shell-Mex side of Ferensway at 10 a.m. prompt. Will all car owners who are prepared to bring along their cars fill in the form on the Club notice board or communicate with the Hon. Secretary? Also, those desiring accommodation should fill in their names on the notice board. Several machines will, of course, also be flying over on each of these days, but only a strictly limited number of seats are available. It is proposed to make a charge of 6d. a half-hour for use of the badminton courts. Thanks to the generosity of several club members, two sets of new racquets have been presented to the Club. On Thursday, May 11, the Club will entertain members of the staff of Messrs. Wm. Cussons, Ltd., and all members who are able are asked to come along and help.

YORKSHIRE AEROPLANE CLUB

During the week ending April 22 the Club machines have flown 25 hr. Three new members have joined, Messrs. Gadie, Smith and Venables, from Bradford, Huddersfield and Otley. Several taxi flights have been carried out during the week, including one to Dublin and one to Croydon.

Last week two new members joined up—Messrs. Bigland, of Ilkley, and Goldthorpe, of Halifax—and flying hours approximated 22 hr. Taxi trips included journeys to Nottingham and London.

SCOTTISH FLYING CLUB, LTD.

The annual display of the Club will be held on May 20-22. The Royal Air Force and Auxiliary Air Force are giving their help on the Saturday (May 20).

INDIAN FLYING CLUBS

The following statistics from India for March show that flying in India is becoming increasingly popular. The Delhi and U.P. Flying Club, with a membership of 245, and with five D.H. machines, totalled 208 hr. 55 min. Cawnpore Centre Flying Club, with a membership of 102, and with two D.H. machines, totalled 30 hr. 15 min. The Jodhpur Flying Club, with a membership of 50, and three D.H. machines, totalled 9 hr. 25 min. The Bengal Flying Club, with four D.H. machines, totalled 130 hr. 10 min. The Bombay Flying Club, with 270 members and four D.H. machines, totalled 164 hr. 20 min. and the Madras Flying Club 76 hr. 15 min. Incidentally, it appears that the de Havilland " Moth " holds the monopoly among club machines in India.

A FLYING CLUB FOR HYDERABAD

Mr. Babr Mirza, a young local aviator, who has done much flying in Hyderabad, has started a flying club in that State. His idea is to run it on the same lines as other clubs in India, and has engaged the services of two experienced Englishmen, Mr. L. W. W. Howard, late instructor of the Royal Air Force, as pilot, and Mr. P. B. Swan, who possesses all the four ground licences, as ground engineer.

BENGAL FLYING CLUB

During March aerial activity has been much on the increase and seven new pupils have joined the Club. One of the new comers is Miss Susama Mookerjee, the first Bengali lady to learn to fly. Mr. D. Keiller is to be congratulated on being the first Club member to obtain an "A" licence ; he was a pilot in the Royal Air Force during the war. Cross-country flights were done by Messrs. T. M. Dow, B. K. and Mrs. Bose, Keiller and Mrs. Matthews, Pountney and Robinson, Biren Roy and Pal Choudhouri, B. D. and A. D. Mookerjee, and Dougall and Tomlin. On March 31 a Club machine was chartered by Mr. Allan, of Bombay, to visit his wife who was ill in Rangoon, which place was reached at 3 p.m. Mr. Carl Nauer, a Swiss airman, landed at Dum Dum in a " Puss Moth " on a flight from Zürich to Australia. Mr. Rein Loring, a Spanish pilot, landed on a Comper " Swift " on a flight to Manila. Flying time for the month totalled 133 hr. solo and 28½ hr. dual. Membership now stands at 331.

THE DE HAVILLAND SCHOOL OF FLYING

THE flying time for the week ending April 23 was 78 hr.

The Hon. Ivor Guest has taken over G-AAKU from Mr. F. A. White. The first solos were launched during the week, Mr. Manwaring after 8 hr. dual and Mr. Martens after 8 hr. 55 min. dual.

The R.A.F. Officers attached to the Iraq Air Force, Flt. Lt. G. L. Carter and Flt. Lt. H. E. Forrow, arrived with several Iraq Officers to familiarise themselves with the new " Dragon." A complement of eight of these machines, adapted for military use, will be flown out to Iraq by these officers shortly.

The Stage and Screen Aero Club members are showing keener interest. Their " Moth " machine G-AADI gives them an opportunity of a quick change of scenery and pleasant relaxation. Mr. James Raglan, who is largely responsible for the organisation, gives individual attention to any inquiries about the Club sent to him at the above address.

The flying time for last week was 67 hr. F/O. J. A. Harris, who until recently was instructing in No. 500 County of Kent (Bomber) Squadron at Manston, has joined the staff of flying instructors. Lt. Col. Hamilton Gault, M.P. (Taunton), accompanied by Chief Instructor Flt. Lt. Reeve, has just returned from a tour round Italy and Sicily in G-AAGA. Every courtesy was shown them on military and civil aerodromes in Italy, and they cannot speak too highly of the charming attitude of everyone towards them.

THE EIGHTH A.I.D. ANNUAL DINNER

THE annual dinner of the A.I.D. Technical Staff Association was held at the Holborn Restaurant on Friday, April 28. This was the eighth of these dinners, and was as successful in every way as the seven which have preceded it. Mr. J. J. A. Gilmore was in the chair, and Sir Philip Sassoon, Under-Secretary of State for Air, was the guest of honour, and proposed the toast of "The A.I.D." Before proposing the toast, Sir Philip said he must refer briefly to the tragic loss of Air Marshal Sir Geoffrey Salmond. He pointed out the tragedy of a brilliant career cut short at the very moment when Sir Geoffrey had reached the top of the ladder. His death was a great loss to the Service which he had done so much to build up. Geoffrey Salmond was great in the field, great in the air and great in the council chamber. His death was an irreparable loss to the Service and to his friends. He asked the company to stand silent for a few moments as a token of their respect and grief.

Turning to the toast of the A.I.D., Sir Philip Sassoon said he was somewhat anxious when he reflected that the company to which he was speaking existed to find faults, but he hoped they would, in his case, exercise their critical faculties with charity. He recalled that the work of the A.I.D. was of supreme importance, and that their certificate was the almost perfect guarantee of excellence of construction. On the A.I.D. rested not only the reputation of British aircraft but the lives of those who fly. It was in a large measure due to the A.I.D. that Britain had such a high reputation for reliability. No man could escape criticism altogether. The A.I.D. had been criticised, but he did not think the criticisms carried much weight with those who *knew*. Sir Philip recalled that the A.I.D. had been built up from small beginnings, and concluded by expressing the hope that the future of the A.I.D. would be as conspicuously successful as was its past.

Replying to Sir Philip Sassoon, Lt. Col. Outram, Director of Aeronautical Inspection, said he thought the nice things Sir Philip had said of the A.I.D. were well deserved. As an illustration of the volume of work done by certain inspectors, Lt. Col. Outram quoted that two firms had, between them, delivered 67 aeroplanes in one month, and two of the engine firms between them delivered more than 100 engines in the same period. In civil aviation the main change during the year had been the amalgamation of Lloyd's Register and the British Corporation Register into the Joint Aviation Advisory Committee. During the year ending March, 1932, 540 certificates of airworthiness were renewed, 196 by A.I.D. and 344 by Lloyd's, and the B.C. During the past year the total had increased to 652, the A.I.D. share being 205, while the J.A.A.C. had dealt with 447.

Referring to the inauguration of a number of internal air lines, Lt. Col. Outram said he was convinced that the success of these must depend upon freedom from accident, and he was glad to say the operating companies were working in close co-operation with the A.I.D. In the case of the joyriding "circuses" careful maintenance was much more difficult than on a line working from a fixed base, but in this case also the combination of A.I.D. inspectors and the organisation's own ground engineer had so far proved successful.

Overseas the A.I.D. was extending. They had a staff at Heliopolis and one at Kisumu. At the latter place the staff had been authorised to place their services at the disposal of the authorities in Tanganyika, Kenya, Uganda and Northern Rhodesia. There was a possibility that during the next year the A.I.D. might extend further eastward and open an A.I.D. station at Singapore.

Mr. J. J. A. Gilmore, chairman of the evening, and chairman of the Council of the Technical Staff Association of the A.I.D., proposed the toast of "The Visitors." He asked the audience to note that the toast was not "The Guests." There was, he said, a difference. In looking around at those present, he was struck by the way in which the importance of the guests (visitors) increased year by year, and then proceeded to say a few kind (or otherwise) words about some of the more prominent guests (visitors). He was very glad to see there that evening the Under-Secretary of State for Air, and thanked him for the nice things he had said of the A.I.D. He hoped it would not be the last occasion Sir Philip would be with them.

He also welcomed most sincerely the Air Member for Supply and Research, Air Marshal Dowding, and pointed out that the A.I.D. tried always to work in the closest possible co-operation with the service. He was very pleased he had got his old friend Sir Henry McAnally off the shelf, and caused some merriment by saying he was glad Sir Henry was not speaking, as he had threatened certain indiscretions.

He was not quite certain of the number, but he thought there were present some 15 or 16 members of the administrative service, and then referred to the fondness of the public Press to make comments on civil servants, which, believe it or not, the A.I.D. were. According to the Press, if one messed about with the salaries of civil servants, little things like the debt to America did not matter much. A beginning had been made by the ruling that after May 1 the A.I.D. were to travel third class, with, he thought, one exception. All this was done to remind them that they *were* servants, even if they had to be civil. He hoped in future the visitors would think kindly of the poor A.I.D. people travelling on the hard seats.

He saw around him at least 15 representatives of the petroleum industry. Petroleum was going to play an important part in aero-engine development, and he, therefore, welcomed the presence of its representatives. It was true that during the year there had been a slight difference of opinion. Some had even called it a fight. But that was all being settled.

The aircraft world owed a lot to Sheffield, and Mr. Gilmore, therefore, was very pleased to have with them Professor Andrew, of Sheffield University, and they could be proud that in the Air Ministry they had been pioneers in the use of new metals. They had forgotten about such common things as cast iron.

Replies to the toast of "The Visitors" were made by Mr. C. R. Fairey, Mr. A. H. Hall, and Mr. C. E. Woods Humphery.

Mr. Fairey said he would like to associate himself with what Sir Philip Sassoon had said about Sir Geoffrey Salmond. To all who had the privilege of knowing him, Sir Geoffrey was not only a brilliant officer but an outstanding side of his character was his great humanity. He wished to express his appreciation of yet another year of co-operation between the industry and the A.I.D. British prestige had lost nothing during the last year. On the contrary, we held, until quite recently, the three principal world's records. We should let the fact that we had now lost one of them be a stimulus to further effort. Britain's technical position was now higher than it had ever been before, and he was pleased to testify that much of this was due to the A.I.D. The good spirit which existed between the industry and the A.I.D. was responsible for this. That had not always been so. Mr. Fairey also had a few words to say about Geneva. The aircraft manufacturer appeared always to be the villain of the piece, and there seemed to be a sort of fear of the transformation of aviation. If the weight limit suggested came into force, the aircraft world would be in for an era of unparalleled activity. He had spoken quite recently to a famous French aircraft constructor who *happened* to have nearing completion a new type of *exactly* the proposed tare weight limit. He (Mr. Fairey) wondered who proposed this limit. Geneva lived in an atmosphere of unreality. Air transport would be the greatest pacifier in the world.

Mr. A. H. Hall (Superintendent of the Royal Aircraft Establishment at Farnborough) said he regarded himself as the stale bread between the two layers of jam in the sandwich that evening. He thought they could congratulate themselves on the appointment of Mr. Gilman to membership of the Institution of Professional Civil Servants and to the Whitley Council. The idea appealed to him of watching another man watch someone else do a job of work. If he had to be inspected he would rather be inspected by the A.I.D. than by anyone else.

Mr. Woods Humphery, managing director of Imperial Airways, said he was glad to pay a tribute to the A.I.D. They had been criticised, but no one had called them parasites. Yet they were parasites, although they seemed to do their work by tickling rather than by biting. Reference had been made to the work of the A.I.D. in connection with new aeroplanes. In civil aviation they had to deal with part-worn material, which made the work more difficult. The A.I.D. had done the work with great tact and skill, and he was grateful for their helpful attitude. In conclusion, he would like to mention one man who had helped them through a very difficult period, Mr. Charlie Grace.

The Cierva Autogiro C.30

With flying controls reduced to a "hanging stick," the piloting of the latest type of Autogiro becomes comparable with the driving of a motor car

HE would be a sceptic indeed who could witness the demonstration which Mr. de la Cierva gave at Hanworth on April 27 and still doubt that the Autogiro has "arrived." Only two things can now delay the popularisation of this type of aircraft: Prejudice and price. "The two pees," as one may call them, are fairly formidable obstacles, but they are small in comparison with the technical problems which Mr. de la Cierva has now left behind him. The evolution of the autogiro has been a somewhat slow business, and at times one may have felt some doubts about the ultimate vindication of one's faith in the principle. But when it is considered that the aeroplane—that is to say the orthodox aeroplane—has had the brains, energies and financial resources of the world concentrated on its development, and that, technically at any rate, Mr. de la Cierva has worked single-handed, so to speak, it is really rather marvellous that he has progressed as fast and as far as he has. In this connection one should not forget to pay a tribute to Air Commodore J. G. Weir, who has been chairman of the Cierva Autogiro Co., Ltd., for a number of years, and whose financial backing has made the technical progress possible.

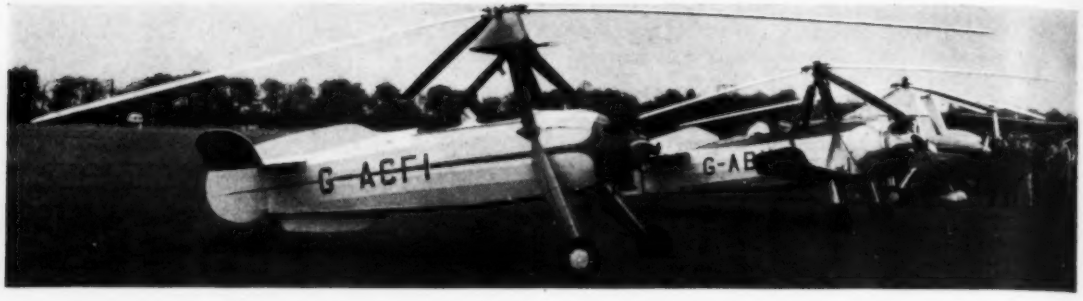
After watching Mr. de la Cierva's demonstration of the C.30 one can no longer doubt that the justification of the confidence of those who have worked with and for him is at hand, and that all the main technical problems have been solved. Prejudice, the dislike of the unusual, doubt of the reality of the claims made, all these are still against it, but they are lessening every day. The autogiro, with its whirling "windmill," still attracts attention wherever it is seen, but whereas the attitude used to be rather that of the farmer and the giraffe, it is now, to the man in the street, "oh! yes, it's that helicopter."

DECEPTIVE PERSPECTIVE : Although very substantial, the undercarriage of the C.30 does not loom as large as this view would indicate. The wheels are placed very far forward and the radius rods are always under tension. (FLIGHT *Photo.*)

He *will* persist in thinking of it as a helicopter, but he *does* associate with it safety in flying. And in aviation circles the prejudice is gradually being broken down. That the latest type will remove practically all remnants we firmly believe. The machine does the most incredible things—when piloted by Cierva—but it does them in such a way that they seem quite natural.

On the arrival of those invited to the demonstration Mr. de la Cierva gave a short talk to explain the machine, and outlined the programme of demonstrations which he intended to give. The talk was somewhat interfered with by the flying past of the Handley Page Heinkel He.64, carrying Sqd. Ldr. England and Dr. Lachmann, who "dropped in" in the middle of the talk,

THE LATEST "AUTOGIRO" : Note the tripod support of the rotor head and the long-stroke wide track undercarriage. (FLIGHT *Photo.*)



EVOLUTION : These members of the " Autogiro " family include, from left to right, the C.30 (" Genet "), the C.19 (" Genet "), the C.24 (" Gipsy III ") and the Swift " Autogiro " (Pobjoy). (FLIGHT *Photo.*)

giving a convincing demonstration of the strength of the new Heinkel undercarriage, but not otherwise contributing anything useful to the proceedings. One does not expect to see the autogiro at Radlett on Wednesday at the demonstration there, but doubtless there will be a suitable opportunity for comparison at the R.A.F. Display at Hendon.

Mr. de la Cierva's demonstrations included ordinary approaches and landings, *i.e.*, such as would be made by an aeroplane, flat approaches and steep (vertical) descents, the machine stopping, in the latter, without any run whatever. Posts were then erected at a distance of about 65 yards, and carrying tapes at a height of 6 ft. or so. With the machine stationary near one tape, Mr. de la Cierva took off towards the other tape, which he cleared by a margin of at least 6 ft. That is to say, in some 65 yards from standing start, he reached a height of at least 12 ft. with the lowest part (the tail wheel) of the machine. We doubt if this is quite as good as could have been done with some of the older types, but this seems to be due to the arrangement of the C.30 (we shall refer to this point later), and in any case the take-off is sufficient for all practical purposes.

Then came a demonstration which was mainly intended to—and did tremendously—appeal to the representatives of the general press. Carrying a passenger, who let down a parcel on a string, Mr. de la Cierva flew slowly across the aerodrome, and an assistant on the ground ran along and took the parcel off the string. When next the machine came around he ran out and hooked the parcel on to the string, which was then wound in and the parcel taken on board. One very amusing incident occurred during this demonstration. A press photographer was kneeling down to get a picture, but either did not like the particular view point or else had exposed one plate and wanted to expose another during the same flight. At any rate, he got up, ran on ahead of the machine, stopped and took his picture *when the machine had caught up with him!* A " race " between the autogiro and a man running resulted in an easy win for the latter, who far outstripped the machine, which during this demonstration could not have been doing more than about 5 m.p.h. across the aerodrome. The wind, it should be mentioned, was certainly not more than 12-15 m.p.h., so that it appears certain that the C.30 will fly as slowly as about 20 m.p.h., air speed. Landing over the tape, to simulate landing in a small field, over a hedge, Mr. de la Cierva brought the machine to a standstill about 10 ft. from the tape over which he had landed.

To us the most convincing of all the demonstration was that of landing with the engine stopped. One has often had the feeling that many of the amazing feats of which the autogiro is capable might be due in no small degree to the judicious use of the engine. That a true glide landing, when the engine has stopped completely, can be made just as readily if the pilot has the judgment necessary for a correct approach was well shown. Stopping the engine at a couple of hundred feet altitude, Mr. de la Cierva came down in a series of steep glides and flatter glides. In other words, if an inexperienced pilot approaches in as flat a glide as he can, and finds himself " overshooting," he just pulls the stick back a little, and the machine sinks

CLEARING THE TAPE : The run, from standing start, began about 65 yd. from the tape, and the machine cleared the tape by about 6 ft. (FLIGHT *Photo.*)

SWIFT AUTOGIRATION: "Nick" Comper flying the Comper "Autogiro." This is the fastest autogiro built in this country. (FLIGHT *Photo.*)

more steeply. If that is likely to cause him to land short of his mark he again dips a little, and so on.

The C.30

Lined up before the demonstrations began were four autogiros which admirably marked recent stages in the evolution. The C.19, somewhat modified for experimental work, represented what is, perhaps, the best known of all the types. Then came the little cabin machine built by the de Havilland company—the C.24. Next to this was the Comper "Swift"-autogiro, a rotor on a "Swift" fuselage, with a diminutive lower wing fixed plane. And finally the new wingless, direct-control C.30. We believe it had been hoped that the French autogiro built by Liorè and Olivier might have been included, but it had not arrived.

The C.30 marks the culmination of a long series of experiments on direct control wingless autogiro flight. There were, we believe, several objects in Mr. de la Cierva's mind when he began these experiments. At any rate, several advantages appear to be combined in the latest type. Simplicity of control is, perhaps, the outstanding feature. The rudder and elevator have been entirely suppressed, at least as control surfaces, although in *appearance* the C.30 still seems to have a rudder. This is not, however, a movable surface, but merely fin surface extending aft of the stern post of the fuselage. The fixed tail has up-tilted tips, the object of which is to provide additional fin area. On one of these tips (the port) there is a small hinged flap, but this is used merely for trimming.

Control is entirely by tilting the rotor, the head of which is universally mounted. The "stick" is of the hanging type, and a foreward movement tilts the rotor axis forward, making the machine descend, while a rearward movement has the opposite effect. Lateral control is combined with directional control in the side-to-side movement of the stick. Moving the stick to the left banks the machine to the left, and at the same time turns it in the same direction, while a right-hand turn is made by moving the stick to the right. The rotor head, universally mounted as it is, presents a fairly exacting workshop task, but the Mollart Engineering Co., Ltd., of Thames Ditton, who built the whole rotor head and starting gear, have made a very good job of it. The whole mechanism is enclosed in a streamline fairing. The feet are not used at all in controlling the C.30, and Mr. de la Cierva is contemplating fitting an accelerator pedal in conjunction with the hand throttle, thus further increasing the resemblance to driving a motor car.

The only conceivable drawback to the direct-control method of piloting the autogiro would appear to be that one cannot turn without banking. There might be circumstances which would make it an advantage to be able to do so, when coming in to land in a restricted space, for example, but as the rotor blades are, especially when coming under the lift forces, placed fairly high, it should be possible to make a fairly steeply-banked turn close to the ground, and the need for a flat turn may not be really great.

From a performance point of view the suppression of the fixed wing seems definitely to be an advantage. Mr. de la Cierva informs us that the top speed is approximately 103 m.p.h., which is sufficiently good, with the 80 h.p. 5 cyl. "Genet" engine, to show that the new autogiro is certainly not appreciably inferior to the aeroplane in the matter of drag.

The undercarriage is of somewhat unusual type in that the wheels are placed very far forward, almost under the engine in fact. This means that there is no risk of the machine turning on its nose, but it also means that the weight carried by the castering tail wheel is considerable. In fact, in the C.30 a new take-off technique is introduced. When the rotor has reached its proper speed and the wheel brakes are released, the tail does not rise as the machine gathers forward speed. When the lift is sufficient, the front wheels leave the ground, and the tail wheel

PICKING UP A MESSAGE : The man runs along at the speed of the " Autogiro " while attaching the object representing a message. (FLIGHT *Photo.*)

is the last part of the machine to " unstick." In landing at low speed, the tail wheel touches first, and the front of the machine then sinks. This calls for considerable shock-absorbing qualities, and the undercarriage legs have a long stroke. The tail wheel, it should be pointed out, is used for steering on the ground.

The disappearance of the fixed wing, in conjunction with the folding rotor blades, has reduced the folded width to the minimum required by the tailplane, so that garaging does not present any great problem.

At the demonstration at Hanworth the little Comper " Swift "-autogiro was on view, but did not fly, at least not until " Nick " flew it back to Heston. Fitted with the " Pobjoy " engine, the Comper autogiro is remarkably fast, certainly the swiftest autogiro ever seen in this country. The rotor is carried on a tall streamline pylon or tower, and there is a very small fixed wing. The tail has multiple vertical surfaces to give the required fin area, but otherwise the machine is essentially a " Swift " with a high-speed rotor substituted for the usual monoplane wing. We understand that the Comper company does not intend to put the " Swift "-autogiro into production, but that they are open to build the machine to order if asked to do so.

MRS. MOLLISON AND HER POLISH " EXPERIENCE "

REGARDING a recent article in the *Sunday Dispatch* in which Mrs. Mollison reviewed her own life and flying experiences, a somewhat lurid description was included of a forced landing in Poland and its aftermath which, not unnaturally, called forth a strong official protest from the Polish Aero Club. Mrs. Mollison, in defence, disclaimed having made the actual statements as published, and sent a most apologetic letter to that effect to the President of the Polish Aero Club upon learning from the Royal Aero Club of the official protest from the Polish Club. The Committees of the Royal Aero Club therefore rightly deemed it necessary that they should place upon record their disassociation with the unfortunate remarks which had been published, and below we reproduce the Royal Aero Club's letter upon the subject addressed to Mrs. Mollison, together with a letter to the President of the Polish Aero Club covering a copy of their letter to Mrs. Mollison. These are as follows:—

Royal Aero Club,
119, Piccadilly, W.1.
1st May, 1933.

MADAM,

The Committee of the Royal Aero Club have directed me to inform you that they view with grave concern the text of a letter which they have received from the Aero Club of Poland, referring to statements which appeared in an article published under your name in the *Sunday Dispatch* of January 22nd, 1933.

They are satisfied that there is no basis of truth for the statements to which the Aero Club of Poland take exception. They have given careful consideration to the statement contained in your letter to the Aero Club of Poland, that the facts were distorted without your knowledge before they were published, but they cannot accept this explanation. Responsibility for any statements which appeared in an article to which your name was attached is yours and yours alone.

Your flying achievements have justly earned you the respect and esteem of all your contemporaries in British and foreign aviation. In the opinion of the Committee, it was all the more obligatory upon you in consequence to have taken all necessary steps to avoid statements which would be likely to have the most serious effects on the friendly relations existing between British and Polish aviators. In Poland, as in other countries, British pilots have received nothing but the utmost courtesy and help ; your own experience will support me in this.

The Royal Aero Club is charged to see that the facilities accorded by foreign countries to British nationals who fly abroad shall not be abused. Still more does the Club count it peculiarly a matter of the honour of the entire British flying movement that misrepresentation shall not be returned for hospitality.

Only their appreciation of the gravity of the affront to the Aero Club of Poland could have induced the Committee of the Royal Aero Club to take the serious step of informing you formally of their strong disapprobation. They regret the necessity, but feel sure that you will, on reflection, agree that their action is merited and that every possible means must be taken by British aviators to avoid the recurrence of such unfortunate incidents in the future.

Yours faithfully,
HAROLD E. PERRIN, Secretary.

Mrs. J. A. Mollison, Grosvenor House, Park Lane, W.1.

Royal Aero Club,
119, Piccadilly,
London, W.1.
1st May, 1933.

DEAR SIR,

I beg to refer to your letter of the 20th March, on the subject of the article written by Mrs. Mollison in the *Sunday Dispatch*, describing her forced landing in Poland in January, 1931, and to our reply of the 3rd April, 1933.

This matter has now been fully considered by the Committee of the Royal Aero Club, and I am sending you herewith copy of a communication which has been addressed to Mrs. Mollison to-day.

The Committee are very grateful that you should have drawn their attention to this matter, because they feel that the publication of such an article has created a very wrong impression as to the way in which British aviators regard the help and hospitality invariably extended to them in Poland.

In view of the wide publicity given to the very misleading statements which appeared under the name of Mrs. Mollison, we trust you will correct any wrong impression in the minds of all our friends in Poland by giving the fullest publicity to this correspondence.

We can only repeat, in conclusion, how much we deplore this unfortunate happening.

Yours sincerely,
HAROLD E. PERRIN, Secretary.

The President, Aeroklub Rzeczypospolitej Polskiej,
Aleje Ujazdowskie No. 32, Warsaw.

AIR TRANSPORT

COMMERCIAL AVIATION IN JAPAN

SOME notes concerning commercial aviation in Japan—mainly during the past year—are published in the report on the Economic Conditions in Japan just issued by the Department of Overseas Trade. It is stated that according to official statistics the number of machines licensed and registered in October, 1932, was 129 aeroplanes and 20 seaplanes. Approximately 40 of these machines were owned by the Japan Air Transport Company, Ltd., which operates a regular air service between Tokyo and Dairen. On this company's Tokyo-Dairen route, with the exception of Sunday, aeroplanes are flown twice daily each way between Tokyo and Osaka and between Osaka and Fukuoka. Between Fukuoka and Dairen one flight is made every week-day in each direction, with intermediate calls at the Korean airfields of Urusan, Seoul, Heijo and Shingishu, where a new aerodrome was opened at the beginning of 1932. The times taken are approximately as follow:—Tokyo-Osaka, 2½ hr.; Osaka-Fukuoka, 3 hr.; Fukuoka-Urusan, 2 hr.; Urusan-Seoul, 2 hr.; Seoul-Heijo, 1 hr.; Heijo-Shingishu, 1 hr.; Shingishu-Dairen, ½ hr.

Test flights were undertaken by this company in 1931, with a view to opening a regular air mail service between Japan and Formosa. One aeroplane and one seaplane accomplished successful flights from near Fukuoka to Taihoku and Tamsui respectively in about 9½ hr., but a regular service has not as yet materialised.

Towards the end of 1931 the company extended its activities to Manchuria, where several new routes were opened, primarily for the convenience of the army and the advance wave of commercial prospectors.

The company is in receipt of a Government subsidy, apportioned over the period 1929-30 as follows:—

Year.	1,000 Yen.	Year.	1,000 Yen.
1929–30	2,750	1934–35	1,660
1930–31	3,580	1935–36	1,360
1931–32	3,230	1936–37	1,010
1932–33	2,900	1937–38	770
1933–34	2,010	1938–39	120

Other regular air services under private management are the Nihon Koku Yuso Kenkyujo, or Japan Air Transport Institute, which maintains a daily week-day mail and passenger service between Osaka and Matsuyama, the Tokyo Koku Yusosha, or Tokyo Air Transport Company, which connects Tokyo, Ito, Shimoda and Shimizu by a service of three return flights a week, and the Ando Hiko Kenkyujo, or Ando Aeronautical Institute, which operates a summer service of one return flight a week between Toyohashi, Gomagori, Futami and Shinmaiko.

The *Tokyo Asahi*, which, like its rival Japanese newspapers the *Osaka Mainichi* and *Tokyo Nichi Nichi*, maintains a fleet of aeroplanes for the rapid transport of Press material, operates a regular summer service of three flights a week between Tokyo and Niigata for the carriage of mails as well as Press material.

In the period April, 1931, to March, 1932, there were 13 accidents, involving the loss of seven lives, in the course of the above regular services, during a total flying period of 15,311 hr., covering 2,002,978 kilometres. During the same period, over 8,000 passengers used these services, while goods carried weighed approximately 77,175 lb. (35,000 kg.) and mails 91,020 lb. (44,000 kg.).

Although aerodromes for the most part consist of no more than natural landing places and the necessary offices and hangars or moorings for aircraft, the new airport of Tokyo, which was opened to traffic in August, 1931, at Haneda on Tokyo Bay, is in process of being equipped with the latest devices in use at aerodromes abroad. The old airfield at Tachikawa, which was too far from the city for convenience, has reverted to the use of the military authorities. New aerodromes are now under construction at Sendai, Aomori and Sapporo and are expected to be completed by the end of March, 1933.

The erection of air beacons to render night air services possible has been delayed by lack of funds. Up to the present only two out of a proposed chain of about 35 have been completed. Aviation ground signs generally were the subject of a new item in the 1932-33 vote of the Ministry of Communications, which was granted the sum of Yen 208,125 for this purpose. In the same fiscal year the sum of Yen 48,230 was voted for the establishment and maintenance of ground signs by the Government of Korea.

In November, 1932, the daily Mukden-Shingishu service of the new Manchuria Air Co., Ltd., was inaugurated with the first of five Fokker Super Universal six-passenger aeroplanes ordered from the Nakajima Aircraft Works at Tokyo (illustrated in FLIGHT for April 13 last).

As the result of orders from the army and navy, the Japanese aircraft manufacturing industry is now enjoying the biggest boom in its brief history.

Air Mail Traffic

DURING the quarter ended March 31, 1933, 34,388 lb. of letter air mails were carried from this country as compared with 27,738 lb. during the corresponding quarter of 1932, an increase of 24 per cent. The carryings to India alone were 10,234 lb. as compared with 9,000 in the March quarter of 1932, an increase of about 14 per cent. Details of the letter air mail traffic for the March quarter for 1933, and 1932 (in brackets) are:—Indian Air Service (including Egypt, Iraq, etc.), 14,921 lb. (13,295 lb.); African Air Service, 5,218 (3,142); other extra-European services, 5,966 (5,896); Continental services, 8,283 (5,405). There was also an increase of nearly 14 per cent. in the amount of parcels sent by air, the figures being 27,761 lb. in the March quarter, 1933, as compared with 24,397 lb. in the corresponding quarter of 1932.

Luft Hansa Summer Services

THE German Airways (Deutsche Luft Hansa A.-G.) started their summer services on May 1. There will be, throughout the summer, 53 air lines in operation for carrying passengers and seven lines specially for mails and freight. Through these lines all the important towns in Central Europe will be served and landings will be made in 52 towns in Germany and in 31 towns abroad. The aeroplanes of the Luft Hansa cover daily a distance of 46,000 kilometres (29,000 miles). A special improvement in the service has been achieved by speeding up practically all the lines. Through this a number of new international connections can be made. A special express service is operated between Berlin and Rotterdam (Amsterdam) with through connections to and from London. The distance between London and Berlin and *vice versa* is covered in 5 flying hours. Between Amsterdam (Rotterdam) and Berlin the very fast aeroplane, type Junkers Ju 52, three-engined, for 15 passengers, is on service. Apart from this connection the well-known 09.20 service from Croydon to Berlin is operated the whole year round. Another improvement has been achieved in speeding up the service between Berlin and Rome across the Alps. Rome can now be reached from Berlin in 9 hr. 25 min. A special feature of the summer service is the improved and quickened mails and freight service. Apart from the well-known night mail and freight line between London and Berlin there will be four more night services in operation which connect with the London-Berlin service at Cologne. It will, therefore, be possible that mails and freight which leave Croydon at 22.00 hours will arrive in Berlin at 04.55, in Copenhagen at 06.20, in Malmö at 05.50, in Stockholm at 09.30, in Vienna at 11.35, in Budapest at 13.20, in Belgrade at 15.30, in Sofia at 18.55, in Venedig at 15.25, in Rome at 18.25, in Leningrad at 19.35, in Moscow at 20.40 and in Helsingfors at 14.15 the following day. On several lines the passenger fares have been considerably reduced. As in the previous years the catapult services across the North Atlantic in connection with the s.s. *Bremen* and the s.s. *Europa* will also be operated. Letters and freight sent by this service will have a gain in delivery of 24 hr. on the American side and of 36-48 hr. on the European side.

AIRISMS FROM THE FOUR WINDS

New Scheme of Flying Training in India

A NEW scheme of flying training of the Royal Air Force Reserve has been introduced in India. The training takes place on approved light aeroplane types instead of Service types, and a more comprehensive training programme, approximating closely to Service practice, has been inaugurated. The scheme will enable an increased amount of flying to be undertaken annually by all the Reserve pilots, without additional cost, thanks to the introduction of the light aeroplane types. Moreover, the scheme will enable the training programme, both in flying and ground subjects, to be greatly extended, and will approximate more closely to the training given to Service pilots. The flying syllabus will include practice, aerobatics, "blind" flying, gun work and photography for all pilots in addition to the increased amount of pilotage. The training on flying-boats will be substituted for the training hitherto given to the selected pilots on floatplanes. The improved syllabus of ground training will include ground instruction, airmanship, air pilotage and armament.

Madrid—Manila

SENOR REIN LORING, who, as previously reported, left Madrid on March 18 on a flight to Manila, arrived at his destination on April 10. Señor Loring, who is shortly to make the return journey, was flying a Comper "Swift" fitted with a Pobjoy engine.

Mr. A. J. Richardson

IN a paragraph published in last week's issue of FLIGHT it was stated that Mr. A. J. Richardson only learned to fly recently. This was due to a misleading report which reached us, and to the fact that the Mr. Richardson, who is taking part in international flights over the Alps, was not at first connected with the Mr. A. J. Richardson who, as everyone in British aviation knows, learned to fly many years back.

T.M.A.C. Display at Stag Lane

ON April 30 a meeting of the Model Aircraft Club (T.M.A.C.) was held at Stag Lane on the invitation of the 3rd Wing (de Havilland's). Capt. de Havilland flew over in his own machine, and was especially interested in scale models, particularly a petrol engine model of one of his own machines. The engine of the model "Gipsy Moth" (the work of Messrs. Collings, Bennett, and Andrews) was given a demonstration run, but the field was unsuitable for flights to be safely attempted. Much interest was shown in the new Squadron Model, which is a low wing "Demon" of pleasing appearance, with its well-shaped fuselage and tapered double surface wing. Several short flights were attempted and others will be awaited with interest. Two very successful mass launches were made, about a dozen models taking part, and all got away without collision or stalling. There was one remarkable flight. A balsa high wing model of 36 in. span and 1¾ oz. weight, belonging to Mr. G. Liggitt, after about 5 min. in the air, was observed floating about beneath a cloud at a height of about 1,500 ft. For a further 9½ min. the model made small circles beneath the cloud and then finally was lost to sight. Altogether about 40 models were flown, including one of the compressed air type. Thanks are due to Capt. de Havilland, Mr. Selwyn Perry, and all members for a most enjoyable meeting.

Seaplane Research

THE paper under above title, read by Mr. Garner before the Royal Aeronautical Society on April 27, has unfortunately been crowded out this week, owing to the extraordinary number of new aircraft types which we are describing and illustrating. A summary of the paper will, however, be published next week.

Sporting Trophies Exhibition

THE Exhibition of Sporting Trophies at the new Shell Mex buildings was visited by the Prince of Wales during the afternoon of Friday, April 28. He was escorted by the Earl of Westmorland and Sir Noel Curtis-Bennett. His Royal Highness stated that he had never seen such a remarkable collection of trophies, and would certainly try to come again.

A Two-day R.A.F. Dinner!

THOSE of our readers who happened to study FLIGHT Diary in our last issue may have noticed that the Oxford University Air Squadron was down for a dinner at the Clarendon Hotel, Oxford, on June 16 and 17! Unfortunately—for the hungry members of the Squadron—this function is, actually, only a one-day affair, which in reality is scheduled to take place on *May 5*. The solution to the mystery lies in the explanation that the opening of the Inverness Municipal Airport, which was originally due to take place also on May 5, has been postponed to June 16-17, and in making the necessary correction in our diary these two functions changed places! Will readers, therefore, please note.

G.A.P.A.N. Air Display

THE second annual Air Display of the Guild of Air Pilots and Air Navigators will be held at Brooklands on Saturday, May 20. It will be opened by the Most Hon. the Marquess of Londonderry, K.G., M.V.O., P.C. The programme will include a demonstration of all the latest types of civilian machines; a "take off and climb" competition; a slow race; Royal Air Force combined aerobatic display and Concours d'Elegance for the "Tatler" cup. The display is being organised from the offices of the Guild at 61, Cheapside, by Flt. Lt. R. C. Preston, A.F.C. The various flying clubs throughout the country are asked to give their co-operation by sending down to Brooklands representative machines. The organiser will be very grateful to hear of "B" licence pilots who will be prepared to give assistance by joyriding, or of any private owners who would care to lend machines for joyriding. The price of tickets will be 5s. and 2s. 6d.; cars 2s. 6d. It is hoped that this year the omnipotent clerk of the weather will be more kindly disposed than he was last year, and the display will thus be a great improvement.

A Film to See

AT last the Plaza presents that much-heralded film "The King's Cup." Reputed to have been written by Sir Alan Cobham, it makes use of aviation to appeal, in an exciting and satisfying manner, to the general public. Flying people must be prepared to subdue their critical faculties and to overlook many shortcomings of a technical nature. Based on a background of a King's Cup Race, the story panders to the Movie King's conception of the public taste, by the inclusion of so-called love interest and the usual triangular jealousies. Many of the characters are obviously based on well-known personages at some of our more prominent flying clubs, and the caricature of these will be welcomed by those in the know. Chief Instructors, who run their staffs on military lines and who relegate their subordinate instructors to positions as ground engineers, would not hold their jobs very long at the present time, but, when all is said and done, it really makes rather a good story. The photography is excellent, even brilliant in places, and few better shots of some of England's prominent landmarks, like the Crystal Palace, the Clifton Suspension Bridge at Bristol, Cheddar Gorge, The Needles and Windsor, have ever been put on the screen. There is only one crash in the film that is really convincingly well done. Much of the flying is technically silly, and the flexibility of the tests for the "A" licence are almost laughable. It looks as if a great deal of the flying was actually taken during last year's King's Cup Race. A grand point about the film is the way in which it works up to a crescendo of excitement instead of trailing off as so many American films do, and the British Dominions Film Corp. are to be congratulated for this feature. The ending of the race, a ding-dong struggle between a "Puss Moth" (incidentally, flown by the much-lamented late Geoffrey Rodd) and a Hawker "Tomtit," carrying the hero and heroine, is in itself worth seeing. As an American friend of ours said: "It is darn difficult to make a good flying film when you are not given both a Navy and an Army to make it specular for you"; and we think that the British & Dominions are to be congratulated on making so much out of a handful of light aircraft.

The "Bystander" Annual Flying Number

THE sixth annual flying number of the *Bystander* will be published on May 24. In this forthcoming issue Sir Harry Brittain, who supplied such excellent material for the article in FLIGHT for April 20, is writing on air travel, while Mr. Gordon Selfridge, Junr., will put before his readers the private owners' point of view. It is also hoped to include several other features of particular interest to the aviation industry and those connected with flying generally.

AIRPORT NEWS

IRAQ'S AIRPORT : The approach to the new airport at Baghdad, which was opened last week by King Faisal.

CROYDON

TUESDAY, April 25, midday, the French soccer team arrived by Air Union aeroplane from Paris and left by passenger car for the Great Northern Hotel, King's Cross, where they attended a luncheon and proceeded the following day by train to Sunderland to fulfil an engagement.

On Thursday evening a French airliner which left Paris with ten passengers for Croydon was forced to land at Marden, Kent, owing to engine trouble, at 6.45 p.m. At 7.10 p.m. a relief aeroplane left Croydon for Marden, which returned within an hour with the ten passengers, their baggage and mails. The passengers quickly passed through the Customs at Croydon and left for the Haymarket by motor coach, where they arrived little short of the scheduled time, despite the interruption to their journey.

Al Brown, the world champion lightweight boxer, arrived by the Imperial Airways airliner *Hengist* from Paris on Friday, the 28th. He was accompanied by his manager.

Mr. Norman Davis, the United States envoy to Europe, flew from Paris to London on Saturday to attend the meeting of the organising committee of the World Economic Conference at the Foreign Office on Saturday afternoon. He arrived at Croydon shortly after 11 a.m., accompanied by his wife, in the airliner *Hengist* and left almost immediately in a private car for London.

Hundreds of Cup Final excursionists from almost every county, especially from Lancashire, visited the airport on Saturday. Over a hundred special trains had been run to bring them to London. Many had been travelling all night. They were met at the stations in London by motor coaches and arrived at an early hour at the aerodrome, where they watched the arrival and departure of Continental airliners and indulged in pleasure flights.

The fine weather and the visitors to the aerodrome during the week-end made it a busy time for Surrey Flying Services, who carried over 500 people on pleasure flights during Saturday and Sunday.

On Saturday, at Tempelhof Aerodrome, Berlin, President Hindenburg christened the Junkers G.38 (D.2500) "General Field Marshal Von Hindenburg" and the Field Marshal presented the D.L.H. with a portrait of himself, which has been hung in the cabin of the airliner. The D.2500 was scheduled to make her first trip this year from Berlin to London on May 2, after which it is likely to be placed on regular service.

It is with deep regret that we learn of the death of Herr Wende, one of the best known D.L.H. pilots at Croydon. Herr Wende, who was attempting a long-distance solo flight in Germany on Saturday in a single-engined Junkers monoplane, lost his life through his machine crashing. He had a distinguished war record and had flown a great deal between Germany and Croydon during the last ten years.

A banquet which was attended by the President of France, Mons. Le Brun, the Air Minister, Mons. Cot, and representatives of the various airline companies was held at the Aerodrome Hotel at Le Bourget on Sunday. Military and commercial aeroplanes, including three new "Wibault" airliners which are to operate on the London-Paris Air Union service, were arranged in long rows for inspection, and guests were given flights over Paris. The entrance fee to the public to watch the proceedings was 20 fc. The banquet was held as a result of the decision to erect new buildings at the airport, similar to those at Croydon, at an estimated cost of 9,000,000 fc.

During the week more mechanics have been engaged by the Cirrus-Hermes Engineering Co., Ltd., and the output of Hermes engines is being steadily increased. Further consignments have been shipped abroad. Miss Pauline Gower, who is flying for the British Hospitals Air Pageants Tour, visited the Hermes works on Saturday to have the engine of her machine taken out and completely overhauled, a service engine being installed in the meantime. Miss Gower arrived at the Hermes works at 8 p.m. on Saturday and her aeroplane was ready for her to fly away by 10 a.m. the following day. Miss Gower said she was sorry her engine had to be overhauled because it had completed the regulation number of hours, as it was running so perfectly.

Summer air services commenced on Monday, May 1, and white cap covers was the order of the day among the uniformed staffs on the aerodrome. Altogether and including the German night freight service there are now 36 air services operated daily between Croydon and the Continent and this number is likely to be augmented later in the season.

The total number of passengers for the week was 1,410 ; freight, 63 tons 17 cwt.

"HORATIUS."

FROM HESTON

THE Airwork School returns for the last month show an increase in flying hours of 50 per cent. on April, 1932.

For private owners, there have been issued 20 *Carnets de passages*, as against six last April.

The Customs clearances from January to date are 285 in comparison with 178 last year.

B.A.N. Co. have flown 10,536 miles in the month.

The night-flying season has started again, and instructional flying takes place at Heston every Sunday night. In the past fortnight twelve aircraft have made use of the night-flying facilities.

Mr. E. H. Newman is flying the Napier Spartan G-ABST for a 500-hours' test. In order to complete this in 10 weeks he is flying between 7 and 9 hours per diem.

On Thursday we were very pleased to welcome back Mr. Nigel Norman, who has completed a successful tour to the Cape and back in connection with the Beit Trust.

On Friday Heston said good-bye and God-speed to Mr. R. O. I. Muntz and his staff, who officially take over Barton Airport for Airwork on May 1.

On Saturday Mr. Willoughby Norman and Mr. Klotz successfully completed their first solos.

FROM MANCHESTER

THE Marconi wireless station erected for the Air Ministry at the Manchester Airport has successfully concluded its tests and came into regular operation on May 1. This is the first fully-equipped wireless station to be erected in a municipal airport in Great Britain and represents a co-operative effort for the advancement of British civil aviation on the part of the Air Ministry, whose personnel are operating the station and for whom the Marconi Company designed and installed the wireless transmitting equipment, and the Manchester Corporation, which has provided the station site and buildings. The Air Ministry has also established a complete meteorological office at the airport for the issue of official weather reports.

The wireless installation is able to provide civil aircraft operating in the North-West and Midlands of England with the various classes of wireless service that have proved of value in enhancing the safety and efficiency of the Continental and Imperial air routes, including ground-and-air communication by telephone or telegraph, meteorological broadcasts, wireless direction finding, and inter-aerodrome communication. It also has sufficient power and range to keep in touch with aircraft making the Irish Sea crossing to Belfast or Dublin.

The equipment installed, all of which is of the most modern design, comprises a Marconi ground station, transmitter of approximately three kilowatts power input and a Marconi direction finding receiver. The arrangement of the receiving station and direction finder is similar to that at the London Airport, Croydon, which has provided a valuable aid-to-air navigation on the Continental air routes.

The transmitting station is erected at a distance of about one mile from the airport at Barton Moss and remotely operated from the wireless control room on the aerodrome. This is to obviate any possible danger to arriving and departing aircraft on account of the two 100-ft. masts and the aerials of the transmitting station.

THE INDUSTRY

HYDROGENATED LUBRICATING OIL

AT a luncheon in the Savoy Hotel on Friday, April 28, the Anglo-American Oil Co. introduced "Essolube," a new lubricating oil which has been placed upon the market. This oil is well within the requirements of the Air Ministry specification for lubricating aero engines, while at the same time being the standard product for ordinary motor-car use.

Its manufacture is accomplished by hydrogenation, an entirely new synthetic process which alters the structure of hydrocarbon substances. Mr. David S. Paul, manager of the Technical Department of the Company, explained this process. He said that his Company had been concerned with hydrogenating oil since 1926 and had spent over six million pounds on its development. The process was one whereby hydrogen gas and oil were passed through pipes subjected to direct firing at a temperature of 1,000 deg. F. and at a pressure of 3,500 lb. per sq. in. The mixture then passed into a reaction chamber where under the influence of a catalyst the molecules of oil were separated and, in the presence of hydrogen, recombined to form new substances not originally present in the oil. The result has been to produce an oil embodying the five essential qualities of a good motor oil, namely, a good viscosity index, a low pour point, stability, low carbon value and a high flash point.

Mr. F. J. Woolf presided at the lunch and expressed certain pride in the fact that his Company had decided at a time like the present to launch into a new venture. This, he maintained, called for a certain courage, but he believed that the country had now turned the corner and was heading for improved conditions. He remarked that the Anglo-American Oil Co. were the first company to introduce the petrol pump into this country. They were also the first to introduce a leaded anti-knock fuel—Pratts' "Ethyl." Referring to this new product "Essolube," he said that it literally was a new oil which definitely dated all other motor oils. A further interesting feature of it was the new method of delivery, already brought to the attention of his hearers by the fact that their beverages had been served in receptacles exactly similar to those in which "Essolube" would be offered to the public. The oil was definitely a vintage oil, he maintained, and they therefore proposed to serve it to their customers in glass bottles with something of that same care given to vintage ports. The bottles in which it would be stocked would be sealed at their depôts and the oil therefrom remain untouched until it was poured into the motorist's crankcase. In conclusion, he announced that although the Chancellor of the Exchequer had imposed one penny per gallon tax on motor lubricants the Company did not propose to pass that burden on to the motorist.

"SKYBIRD" MODELS

AN interesting booklet entitled "Skybirds" has just been published by A. J. Holiday & Co., Ltd., of 3, Aldermanbury Avenue, E.C., which gives a detailed description of models accurately representing various types of modern and wartime aircraft. The first ten or so chapters deal individually with a separate type of machine and the history and prominent achievements of each type are briefly described. Another chapter deals with the photography of model aeroplanes and the realistic effects of machines in flight which can be achieved by this means. A few pages are devoted to "Skybird" models, which can be adapted for such diverse purposes as motor-car mascots and set pieces for exhibitions or window displays. An appendix is included giving the international aircraft markings and a description of a model aerodrome concludes this interesting brochure.

GYROSCOPES

THE stimulus given by the war to flying necessitated an increasing study being given to aeroplane instruments. To meet this demand the Sperry Gyroscope Company embarked on a large-scale production and intensive research work. Realising the limitations of the instruments then in use, they set about developing a complete line of navigation instruments, such as aircraft compasses, synchronised drift set, bank indicator, Azimuth direction gyro, gyro inclinometer, rate of climb indicator and air speed indicator. The obvious limitations of the magnetic compass during turns and in rough weather lead to the development of an additional instrument of a gyroscopic nature, the well-known turn indicator. The study of blind flying brought into existence the Sperry directional gyro, which has been much used lately in long-distance flights. The Sperry artificial horizon consists of a bowl in which is set a small aeroplane whose nose is on a white line representing the horizon. If the aeroplane dives, the aeroplane silhouette is seen below the white bar; if the machine climbs, the silhouette goes above. If the machine is banked, the silhouette assumes the angle of bank in relation to the white line. Incidentally, Sperry's have also designed an anti-aircraft searchlight which includes in its conception direction finding by sound. Over 1,000 of these have been built for the fighting forces of 11 countries.

Geo. Salter's Address

IN an article entitled "Springs" in our Industry Section last week we discussed some of the activities of Geo. Salter, one of the oldest established manufacturers of springs in this country. Their works were referred to as being at Smethwick, this should, of course, have been West Bromwich, Birmingham.

THE ROYAL AIR FORCE

London Gazette, April 25, 1933.

General Duties Branch

The following are granted permanent commns. as Pilot Officers on probation with effect from, and with seny. of April 10 :—No. 359429 Sergt. E. S. Butler, No. 505857 Sergt. W. Jenkins, No. 362571 Sergt. E. C. Kidd, No. 365963 Sergt. F. D. Terdrey.

Acting Pilot Officer on probation G. D. M. Blackwood is confirmed in rank and graded as Pilot Officer (April 25) ; Flt. Lt. H. R. B. Howell is transferred to Reserve, Class A (April 10) ; Flying Officer E. A. Cooke resigns his short service commn. (April 21).

Medical Branch

The following Flying Officers are promoted to rank of Flt. Lt. (April 18) :—A. M. Weston, M.R.C.S., L.R.C.P. ; V. H. Tompkins, M.R.C.S., L.R.C.P.

MEMORANDUM

The permission granted to Lt. W. Rowley-Redwood to retain his rank is withdrawn on his conviction by the Civil Power (Sept.13, 1932).

ROYAL AIR FORCE RESERVE

RESERVE OF AIR FORCE OFFICERS

General Duties Branch

The following are transferred from Class A to Class C :—F./O. C. S. Clarke (Dec. 23, 1932) ; F./O. R. A. Ford (March 15) ; Sqdn. Ldr. B. C. Rice, M.C., Flt. Lt. P. Phillips, D.F.C., F./O. J. L. S. Gill, A.F.C., F./O. W. Harmston, F./O. E. W. Jordan, F./O. W. R. Parkhouse (April 20).

F./O. J. K. Lawrence is transferred from Class C to Class AA (ii) (March 31). F./O. J. C. Jeffrey, M.C., relinquishes his commn. on appointment to a commn. in the R.A.R.O., and is permitted to retain his rank (March 13).

AUXILIARY AIR FORCE

General Duties Branch

No. 600 (City of London) (Bomber) Squadron.—P./O. L. S. Dawson-Damer, Viscount Carlow, is promoted to rank of Flying Officer (April 15).

ROYAL AIR FORCE INTELLIGENCE

Appointments.—The following appointments in the Royal Air Force are notified :—

General Duties Branch

Wing Commander : C. N. Lowe, M.C., D.F.C., to No. 1 Sch. of Tech. Training (Apprentices), Halton, 19.4.33, for Administrative duties with No. 2 (Apps.) Wing, *vice* Wing-Com. F. Sowrey, D.S.O., M.C., A.F.C.

Squadron Leader : H. E. P. Wigglesworth, D.S.C., to R.A.F. Staff College, Andover, 19.4.33, for duty as Instructor *vice* Wing-Com. G. C. Pirie, M.C., D.F.C.

Flight Lieutenants : J. St. C. Arbuthnott, to No. 54 (F.) Sqdn., Hornchurch, 29.3.33. M. M. Restell-Little, to No. 5 Flying Training Sch., Sealand, 18.4.33. B. W. T. Hare to No. 27 (B) Sqdn., Kohat. India, 18.3.33. R. G. Hart, M.C., to No. 5 (A.C.) Sqdn., Quetta, India, 3.4.33. G. H. Loughnan, to No. 28 (A.C.) Sqdn., Ambala, India, 1.4.33. R. Menzies, to No. 20 (A.C.) Sqdn., Peshawar, India, 23.3.33. E. S. Moulton-Barrett, to School of Naval Co-operation, Lee-on-Solent, 5.4.33. J. W. Colquhoun, to No. 56 (F.) Sqdn., North Weald, 19.4.33. R. J. D. Drummond, to No. 7 (B.) Sqdn., Worthy Down, 23.4.33. V. P. Feather, to R.A.F. Base, Calshot, 22.4.33.

Flying Officers : R. W. P. Collings, to No. 60 (B.) Sqdn., Kohat, India, 17.3.33. E. Esmonde to No. 7 (B.) Sqdn., Worthy Down, 10.4.33. M. V. Johnstone, to No. 32 (F.) Sqdn., Biggin Hill, 3.4.33. J. S. D. Miles, to Sch. of Army Co-operation, Old Sarum, 25.3.33. G. G. Stead, to No. 14 (B.) Sqdn., Amman, Palestine, 13.4.33. R. B. Abraham, to No. 60 (B.) Sqdn., Kohat, India, 1.4.33. J. C. Atkins, to No. 27 (B.) Sqdn., Kohat, India, 1.4.33. D. Barclay, to No. 11 (B.) Sqdn., Risalpur, India, 1.4.33. R. J. O. Bartlett, to No. 20 (A.C.) Sqdn., Peshawar, India, 1.4.33. H. M. B. Collins, to No. 11 (B.) Sqdn., Risalpur, India, 1.4.33. E. J. K. Megaw, to No. 5 (A.C.) Sqdn., Quetta, India, 30.3.33. J. R. Palmer, to No. 28 (A.C.) Sqdn., Ambala, India, 26.3.33. E. G. Wilde, to No. 31 (A.C.) Sqdn., Quetta, India, 1.4.33. The following Flying Officers are posted to Elec. & Wireless Sch., Cranwell, 23.4.33, for Officers Signals Course :—H. G. Adams, E. H. Bellairs, W. S. Hebden, G. Nelson, I. B. Newbigging, R. L. Phillips, A. C. Watson, M. Watson, F. F. Wicks, D.F.C.

Pilot Officers : J. F. Hobler, to No. 32 (F.) Sqdn., Biggin Hill, 18.4.33. J. J. Watts, to Aircraft Depot, India, Karachi, 22.3.33. The following Pilot Officers are posted on 10.4.33, on appointment to Permanent Commns. :—E. Butler, to No. 99 (B.) Sqdn., Upper Heyford. W. Jenkins, to No. 209 (F.B.) Sqdn., Mount Batten. E. C. Kidd, A F.M., to No. 57 (B.) Sqdn., Upper Heyford. F. D. Terdrey, to No. 207 (B.) Sqdn., Bircham Newton.

Acting Pilot Officers : The following Acting Pilot Officers are posted to No. 3 Flying Training Sch., Grantham, on 8.4.33. for flying training :—J. S. Bartlett, E. H. P. Clarke, D. G. S. Cotter, P. H. Dutton, N. D. Gilbart-Smith, J. R. Gillman, R. M. Hall, W. T. King, F. M. Loudon, D. F. Macdonald, H. J. Maguire, A. C. Meeson, S. T. Misselbrook, C. F. Newcombe, H. W. A. Oloff de Wet, J. A. K. Pettit, D. G. A. Rearden, F. C. Scott, G. P. Seymour Price, C. R. Taylor, H. West, and J. P. Selby.

Stores Branch

Flight Lieutenant C. J. Elliott to No. 2 Stores (Ammunition) Depot, Altrincham, 18.4.33.

Flying Officer W. A. Stagg, to Station H.Q., Duxford, 23.4.33.

Accountant Branch

Flight Lieutenant J. L. Armstrong, to R.A.F. Training Base, Leuchars, 15.4.33.

Flying Officer A. E. Fairs, M.C., to No. 47 (B.) Sqdn., Khartoum, Egypt, 5.4.33.

Medical Branch

Squadron Leader J. T. T. Forbes, to No 5 Flying Training Sch., Sealand, 23.4.33.

Flight Lieutenant G. M. Anderson, to Aircraft Depot, India, Karachi, 12.3.33.

NAVAL APPOINTMENTS

The following appointments have been made by the Admiralty :—

Lieut.-Coms. (*Flight Lieuts., R.A.F.*).—R. G. Poole, to *Furious*, and for full flying duties in 811 Sqdn. (April 28) ; and R. R. Graham, to *Dryad*, for course (May 8).

Lieut. (*F/O., R.A.F.*).—P. A. Booth, to *Furious*, and for full flying duties in 811 Sqdn. (April 28).

AIR-MINDED COACH AND HARNESS MAKERS

WITH H.R.H. Prince Arthur of Connaught in the chair, as Master of the Worshipful Company of Coach Makers and Coach Harness Makers of London, an enthusiastic gathering of members and their friends, numbering about 230, foregathered at Grocers' Hall last wee'k for the annual banquet of the company. Membership has developed far outside the original limits of coach and harness makers of the past. Those controlling its destinies having foresight and moving with the times, not only enlarged the scope to embrace motor-coach and aircraft bodywork, but welcomed whole-heartedly those connected with these up-to-date industries. Hence, amongst the company's present members are numbered many very prominent in those respective arts, who have devoted their energies to these epoch-making inventions. Sir John D. Siddeley, C.B.E., as Renter Warden, with Sir Herbert Austin, K.B.E. (as Junior Warden), S. F. Connolly (Senior Warden) are prospective Masters, and by these alone can be judged the value of the "new" (already running into many years) blood which has been "transfused." On Thursday upon this occasion it fell to Sir John Siddeley to voice the toast of the Lord Mayor, the Sheriffs and the Corporation of the City of London, and it could not have been in more worthy hands, giving an opportunity to Sir Percy Greenaway to reply in the happiest terms, leavened with smart touches of humour.

The toast of the evening, the company itself, "May it continue and flourish for ever," in the hands of Lord Blanesburgh, was both reminiscent and informative, if perhaps slightly lengthy ; whilst the reply of the Master, H.R.H. Prince Arthur of Connaught, evinced a furore of applause, especially the less "formal" part of his speech. And, moreover, both H.R.H. and Lord Blanesburgh stressed very strongly the value which the Coach Makers' Company attached to the aeronautical side of the membership. In responding for "The Guests," a delightfully informal and intimate "talk" was given by His Excellency Mon. Jan Masaryk, the Minister Plenipotentiary of Czecho-Slovakia, the toast having been proposed by Mr. A. H. Pollen (Past-Master) in his usual entertaining manner, others coupled with this toast being Lord Camrose and Sir Harcourt-Butler. The Westminster Singers and Maestro Jose de Moraes rendered some delightful singing between speeches.

Amongst others present who were more closely associated with the motor or aeronautical side were Lord Gorell, Mr. F. Handley Page, C.B.E., Sir Malcolm Campbell, M.B.E., Messrs. W. M. W. Thomas, D.F.C., F. S. Bennett, Wing Com. F. A. Baldwin, Col. J. S. Matthew, C.M.G., D.S.O., Maj. J. S. Crawford, Mr. R. D. Thrupp, Capt. C. D. Siddeley, Messrs. E. H. Siddeley, H. Aron, F. G. Bristow, C.B.E., F. Guist, J. G. Reece, S. F. Connolly, R. W. Maudslay, S. Norris, Maj. A. R. Mulliner, M.C., Lt. Col. A. F. Mulliner, V.D., T.D., J.P., Mr. J. A. Mackle, Wing Com. F. C. V. Laws, O.B.E., Group Capt. L. L. Leigh Mallory, D.S.O., Mr. C. R. F. Engelbach, Com. H. E. Perrin, Messrs. L. Walton, O. N. Mobbs, O.B.E., Col. R. Rippon, T.D., G. Gilbert, etc.

ITALY'S NEW AIR STAMPS : We show above some of the very beautiful series of stamps that has been prepared for Italy in connection with the forthcoming flight of the *Graf Zeppelin* from Rome to Rio de Janeiro. They depict the airship flying over various views—the Tomb of Cecilia Metalla and Appian Way (5 lire) ; the Castle of S. Angelo (12 lire) ; the new Stadium of Mussolini (10 lire) ; the Imperial Way (20 lire) and the Forum (15 lire).

AIR POST STAMPS

By DOUGLAS ARMSTRONG

(Editor of "Stamp Collecting")

Mount Evcrest Air Mail

No great air event seems to be complete nowadays without its attendant air mail. The recent Houston Expedition Flight over Everest's snow-capped peak proved no exception to this rule. When Flt. Lt. McIntyre accomplished his spectacular circuit of the world's highest mountain he carried with him a limited mail of letters addressed to H.M. the King and other notabilities franked with Indian air mail and ordinary postage stamps cancelled with a special circular postmark inscribed "Houston Mount Everest Flight—Purnea" round the circumference and with the date "Apl. 3, '33" across the diameter. These interesting souvenirs are believed to number something less than a dozen, so that they will be quite hard to come by. Their interest lies entirely in their connection with this notable aerial achievement, since the air mail cannot be regarded in any way as a necessary adjunct to the undertaking. Nevertheless, they must have a certain sentimental appeal to collectors of Empire air post mementoes.

Latest Zeppelin Stamps

In connection with the first South American trip of the airship *Graf Zeppelin* in 1933 a strikingly artistic series of particular postage stamps has been provided by the Italian Government for use upon letters originating in Italy and the Italian Colonies for transmission to Rio de Janeiro on May 29, when the dirigible is scheduled to leave Rome *en route* for Friedrichshafen, Barcelona and Pernambuco. There will also be a special connection with the Republic of San Marino, whose contemporary air mail stamps are to be expressly over-printed and surcharged for the occasion. A selection of the very effective and appropriate designs prepared by the Italian artists Rondini and Mezzana for the latest Zeppelin stamps is reproduced on this page, and they make a noteworthy addition to the many special issues associated with the voyages of the German airship. First placed on public sale on April 15, they are to be withdrawn from circulation on the completion of the round trip. The edition is restricted to 20,000 complete sets in the case of the Italian home issue and 10,000 for each of the Colonial post offices.

Polish Air Commemorative

Poland pays a belated tribute to the two national aviators who won the Round Europe Challenge Flight last year with a special postage stamp of 30 groszy denomination, handsomely engraved and printed in sage green with laurel bedecked portraits of Pr. Zwirko, the pilot, and St. Wigura, the observer, flanking a picture of their famous aeroplane "SP-AHN" in which they accomplished the flight.

Australia-New Guinea Air Mail

Only 148 letters were carried on the first official air mail from Australia to Salamaua (New Guinea) which left Queensland by boat for Port Moresby on February 4, 1933, and was thence conveyed by air to Salamaua, where it arrived on February 10. Air postage was paid in both Australian and Papuan air mail stamps.

G.W.R. Air Mail Service

Although a number of letters were despatched by aero-collectors on the inaugural flight of the Great Western Railway Company's passenger air service between Cardiff and Plymouth on April 12, 1933, objection was raised by the Postmaster-General to the transmission of correspondence by aeroplane under frank of the Railway Company's parcel stamps as constituting an infringement of his monopoly with the result that for a few days the service was suspended as regards the carriage of mails. Following representations that the air service actually constituted a part of the G.W.R. system, the embargo was subsequently withdrawn, and letters may now be despatched by aeroplane, effecting a saving in time of about 18 hr. as compared with the ordinary post.

NEW COMPANIES REGISTERED

MASONIC COUNTRY & FLYING CLUB, LTD., 49, Queen Victoria Street, E.C.4. Capital £100 in 1s. shares. Objects : To establish, maintain, conduct and control a country and flying club for the accommodation and flying instruction of Freemasons and their friends, etc. Governing directors : Frederic W. Langley, The Nook, Grasmere Road, Purley, Surrey, and Nathaniel W. Harper, 6, Holly Mount, Hampstead, N.W.3.

ADASTRAL PAINTS, LTD., 26, Garden Road, Walton-on-Thames.—Capital £100 in £1 shares. Acquiring the registered trade mark "Adastral." Manufacturers of cellulose, leadless impenetrable paint for all kinds of aircraft, motor bodies, etc. Directors : Wm. H. Kemp, 26, Garden Road, Walton-on-Thames, cellulose manufacturer ; Mrs. Bessie A. Kemp, 26, Garden Road, Walton-on-Thames.

PUBLICATIONS RECEIVED

The Autogiro and How to Fly It. By R. Brie. London : Sir Isaac Pitman and Sons, Ltd. Price 5s. net.

National Physical Laboratory Report for the Year 1932. London : H.M. Stationery Office, W.C.2. Price 14s. net.

AERONAUTICAL PATENT SPECIFICATIONS

Abbreviations : Cyl. = cylinder ; i.c. = internal combustion ; m. = motors.
(The numbers in brackets are those under which the Specification will be printed and abridged, etc.)

APPLIED FOR IN 1931

Published May 4, 1933

24,796. H. K. BINKS. Supporting-surfaces of aircraft. (390,528.)
28,486. A. WISEMAN, LTD., and A. WISEMAN. Liquid-fuel feed-pumps for i.c. engines of Diesel or compression-ignition type. (390,547.)

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